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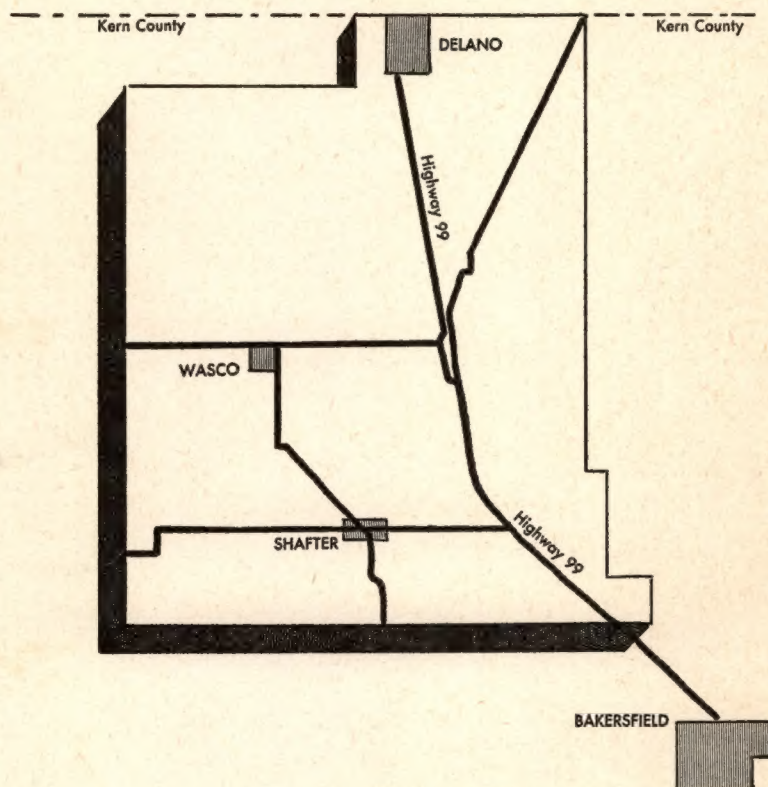
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UNIVERSITY OF CALIFORNIA

NORTHERN KERN COUNTY COTTON-POTATO FARMS



No. 1
OF A SERIES

**ORGANIZATION, INPUTS
and COSTS**

CHESTER O. McCORKLE, JR.

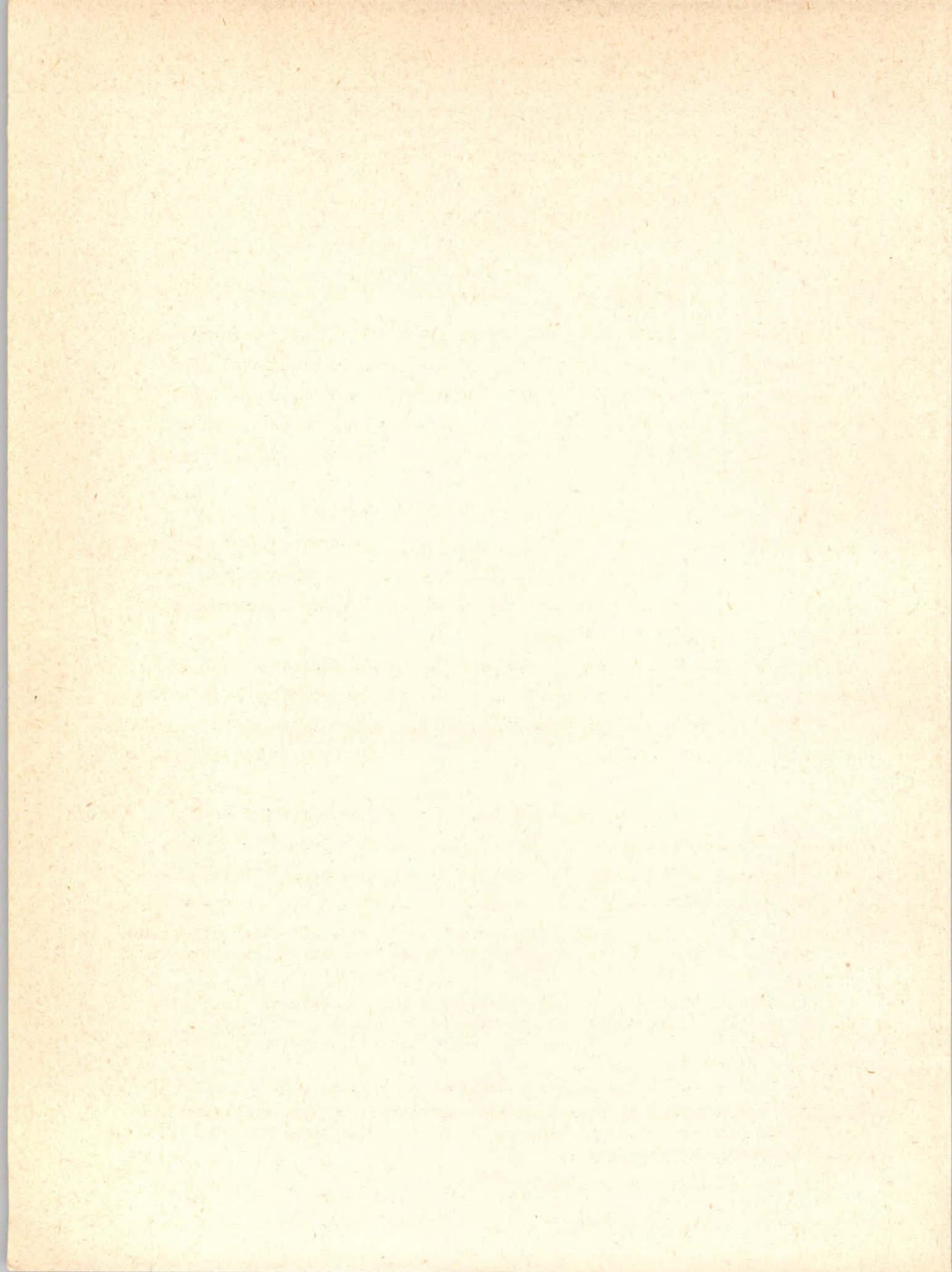
TRIMBLE R. HEDGES

**CALIFORNIA AGRICULTURAL EXPERIMENT STATION
GIANNINI FOUNDATION OF AGRICULTURAL ECONOMICS**

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NORTHERN KERN COUNTY COTTON-POTATO FARMS

1. Organization, Inputs, and Costs^{1/}

Chester O. McCorkle, Jr.^{2/}

and

Trimble R. Hedges^{3/}

Summary

Northern Kern County produces a variety of agricultural products with cotton and early potatoes being the principal crops in individual farm organizations. Barley, milo, alfalfa, sugar beets and onions are also important. Some producers are planting oil seeds such as safflower and castor beans but the acreages are small and the plantings still largely experimental.

Two-thirds of the soils in the area studied are well suited for cotton and general farming. Sandy loams of the Hesperia and Hanford series predominate but significant areas of the Delano series are present. The long warm growing season and available water for irrigation make the area suitable for a wide variety of crops.

Organizational data from 405 farms of all sizes indicated that the largest number of farms cluster around the 80 and 160 acre units, although these farms accounted for less than 24 per cent of the total cropland farmed. Cotton and potatoes occupied over 75 per cent of the cropland regardless of size of farm.

A random sample of 40 farms in the 80 and 160 acre size groups provided detailed organizational and operational data from which inputs and practices could be computed. More variation was found to exist in

^{1/} This report is the first of a series based on detailed investigations of economies of scale in cotton and potato production in the northern Kern County area.

^{2/} Chester O. McCorkle, Jr., is Instructor in Agricultural Economics, Junior Agricultural Economist in the Experiment Station, and Junior Agricultural Economist on the Giannini Foundation, University of California, College of Agriculture, Davis.

^{3/} Trimble R. Hedges is Associate Professor of Agricultural Economics, Associate Agricultural Economist in the Experiment Station, and Associate Agricultural Economist on the Giannini Foundation, University of California, College of Agriculture, Davis.

NORTHERN KERN COUNTY COTTON-POTATO TARIFF

1. Organization, Finance, and Control

Charles O. McGorrie, Jr.

and

Timothy R. Hedges

Summary

Northern Kern County produces a variety of agricultural products with cotton and early potatoes being the principal crops in individual farm organizations. Barley, alfalfa, sugar beets and onions are also important. Some producers are planting oil seeds such as safflower and castor beans but the acreages are small and the plantings will largely be experimental.

Two-thirds of the soils in the area studied are well suited for cotton and general farming. Sandy loams of the Mesquite and Hanford series predominate but significant areas of the Delano series are present. The long warm growing season and available water for irrigation make the area suitable for a wide variety of crops.

Organizational data from 102 farms of all sizes indicated that the largest number of farms cluster around the 80 and 160 acre units, although these farms accounted for less than 24 per cent of the total cropland farmed. Cotton and potatoes occupied over 75 per cent of the cropland regardless of size of farm.

A random sample of 40 farms in the 80 and 160 acre size groups provided detailed organizational and operational data from which trends and practices could be compared. More variation was found to exist in

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equipment and timing of operations than in practices. Inputs and practices were very similar for farms of approximately equal size and organization, but changed significantly with size.

The input data from the farms sampled were analyzed using 1949 prices. The variations in physical inputs and practices then were reflected first, in operating costs for farm equipment and pumping plants and, in turn, in per unit costs of production. In general, the cost per hour of operation for equipment and the cost per acre foot of water pumped varied inversely with the size of farm. This relationship reflects differences in annual use made of these resources and, therefore, in overhead costs. Thus, considering farms of comparable organization, the cost of pumping water on an 80 acre farm was \$7.83 per acre foot as compared with \$6.74 on a 160 acre farm and \$5.77 on a 320 acre farm. Organizational changes were also reflected in costs. Any change which brought about nearer optimum use of any given piece of equipment tended to reduce the per unit operating cost for that equipment.

Per unit production costs for cotton and potatoes on the three farm sizes studied showed a decline in cotton costs from nearly \$111 per bale on the 80 acre farm to \$103 on the 320 acre farm. This reduction is attributed to better use of farm equipment and irrigation facilities. The influence of organization is not entirely removed in these data and shifts in cost components with changes in scale and organization tend to obscure important changes by keeping total costs nearly constant. Other sets of price-cost assumptions would also tend to yield quite different production costs. These costs are merely guides because costs of production are different on every farm and on every field of any given farm. Therefore, the information presented is considered to be typical but not the cost of production for cotton or potatoes. It does show the directional changes to be expected in per unit costs as farm size and organization change.

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Per unit production costs for cotton and potatoes on the three farm sizes studied showed a decline in cotton costs from nearly \$11 per bale on the 80 acre farm to \$10.3 on the 320 acre farm. This reduction is attributed to better use of farm equipment and irrigation facilities. The influence of organization is not entirely removed in these data and change in cost components with changes in scale and organization tend to obscure important changes by keeping total costs nearly constant. Other sets of price-cost assumptions would also tend to yield quite different production costs. These costs are merely guides because costs of production are different on every farm and on every field on any given farm. Therefore, the information presented is considered to be typical but not the cost of production for cotton or potatoes. It does show the directional changes to be expected in per unit costs as farm size and organization change.

3.

Physical Factors Affecting Organization,
Practices and Inputs on Cotton-Potato Farms

For the past four years farm management research in the Giannini Foundation has been oriented primarily toward compiling basic data on production inputs, practices, and costs in important agricultural areas of California. Reports of investigations in the Sacramento Valley rice area and the truck farming regions of the Salinas and Santa Maria Valleys are at various stages of completion. The third study in this series was conducted in the Northern Kern County cotton-potato area, the results of which are reported in this and subsequent publications.

The purpose of this report is to provide individual farmers, extension workers, rural appraisers, businessmen and other interested persons and agencies with facts about the farming units commonly found in the Shafter-Wasco-Delano-McFarland area. This is the first of a series of reports on agricultural production in this area. Attention is focused principally on the purely physical characteristics and relationships, although production costs for cotton and potatoes on various sizes of farms are presented. The strictly economic problems of income, net returns and comparative earnings are left to subsequent reports.

Five specific topics are discussed in this report: (1) the size and organizational characteristics of cotton-potato farms; (2) the natural factors which bear on agricultural production, both physical and biological; (3) the nature of physical input-output relationships for selected enterprises and sizes of farms; (4) the nature of interrelationships between enterprises, how they arise, and their effects on the production process; and (5) specific production costs.

A brief discussion of sources of data, method of collection, and technique of analysis is pertinent at this point to focus attention on the advantages and limitations of the material presented. The early studies in this series are being directed to production areas which are relatively homogeneous in themselves with respect to soil, climate, topography, and farm organization. For this reason, the Northern Kern County cotton-potato area was one to receive early attention.

Two preliminary surveys of the general area were made, the first in late 1949 and early 1950 and the second in April of 1950. The area to be studied was delineated on the basis of data obtained and the next step

Physical Factors Affecting Production
Practices and Yields in Cotton-Planting Areas

For the past four years farm management research in the University of California has been oriented primarily toward compiling basic data on production inputs, practices, and costs in important agricultural areas of California. Reports of investigations in the Sacramento Valley, Kern County and the truck farming regions of the Salinas and Santa Maria Valleys are at various stages of completion. The third study in this series was conducted in the Northern Kern County cotton-potato area; the results of which are reported in this and subsequent publications.

The purpose of this report is to provide individual farmers, extension workers, rural appraisers, businessmen and other interested persons and agencies with facts about the farming units commonly found in the Shafter-Pasco-Bellevue-Hanford area. This is the first of a series of reports on agricultural production in this area. Attention is focused primarily on the purely physical characteristics and relationships, although production costs for cotton and potatoes on various classes of farms are presented. The strictly economic problems of income, net returns and comparative earnings are left to subsequent reports.

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Two preliminary surveys of the general area were made, the first in late 1919 and early 1920 and the second in April or 1920. The area to be studied was delineated on the basis of data obtained and the next step

was to define the sample area precisely and decide upon sampling procedure. Available records in the Kern County office of the Production and Marketing Administration were studied to obtain broad information covering all farms in the area and to identify the population for the sample. Out of a total of 405 farms, defined in terms of operational units rather than separate tracts, a sample of forty farms was selected for individual study. The sampling technique employed was designed to yield random and representative cases.^{4/} The information presented in the section on size and organizational characteristics resulted from analyzing the total of 405 farms. The data from the sample farms provided the basis for the material contained in the latter parts of this report.

Organizational data for each farm in the sampled group of 40 was recorded on a questionnaire, with the help of the farm operator, by a trained enumerator. Information taken included cropping systems, rotations, acreages, yields, irrigation facilities, available farm equipment and power units, available labor resources, plus nature and sequence of production techniques for each enterprise on the farm. The latter included performance rates for all equipment and inputs of all labor and materials through the entire growing and harvesting season. The system of sampling can be expected to result in random selection of typical producers. The information obtained and reported is, therefore, considered representative of the conditions under which typical producers were operating when surveyed. This is not to say that all producers are faced with the same production problems, that they are all following the same pattern of production, or that the resources at their disposal are identical. Variations in resources and practices were numerous. This report presents typical organizational

^{4/} The mechanics of the sample deserve brief note. On the basis of crop acres, farms were segregated into two groups, one composed of farms with from 60 to 90 acres and the other from 140 to 170 acres. These two groups were selected because of the apparent clustering of farms around these two sizes. A restricted random sample (random sampling without replacement) of 30 farms was drawn from each, 10 being alternates in each group to serve as substitutes when an operation changed structure between the time of examination by P. & M.A. and this survey, or when after two recalls the operator could not be reached. The significant feature in sampling for the data desired was randomness and representativeness since typical operational patterns were desired. (The more technical biased or unbiased estimates of particular parameters, with minimum variances attaching to these estimates, served no purpose in this study.)

was to define the sample area precisely and decide upon sampling procedure. Available records in the Main County Office of the Production and Marketing Administration were studied to obtain broad information covering all farms in the area and to identify the population for the sample. Out of a total of 103 farms, defined in terms of operational units rather than separate tracts, a sample of forty farms was selected for individual study. The sampling technique employed was designed to yield random and representative cases. The information presented in the section on size and organizational characteristics resulted from analyzing the total of 103 farms. The data from the sample farms provided the basis for the material contained in the latter parts of this report.

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The mechanics of the sample design are noted on the basis of crop acres. Farms were segregated into two groups; one composed of farms with from 50 to 90 acres and the other from 110 to 170 acres. These two groups were selected because of the apparent clustering of farms around these two sizes. A restricted random sample (random sampling without replacement) of 30 farms was drawn from each, 10 being alternates in each group to serve as substitutes when an operation changed between the time of examination by I. & L.A. and this survey, or when after two recalls the operator could not be reached. The significant feature in sampling for the data listed was randomness and representativeness since typical operational patterns were desired. (The more technical based on unbiased estimates of physical parameters, with minimum variances attaching to these estimates, served as purpose in this study.)

and operating data for types of farms frequently occurring in the area and examines their characteristics. It is believed the resulting data and analysis will be useful as norms in studying farm problems.

Natural Factors Affecting Agricultural Production.--The natural determinants, as opposed to economic determinants, can be segregated into two groups--physical and biological. The principal physical factors are topography, soil and climate while biological factors include weeds, insects and diseases. It is difficult to form categories which facilitate independent treatment since interrelationships exist. For example, climate, soil and water conditions have a decisive effect on the presence, prevalence, and destructiveness of biological species. Some system of separation is necessary, however, inasmuch as all such factors cannot be discussed simultaneously. Topography, soil and climate, therefore, are considered in this and the biological factors in the following section.

Physical Determinants

The topography in the vicinity of Northern Kern County is considered very favorable for irrigated agriculture; the movement of soil to facilitate irrigation is usually limited to establishing adequate "fall." The general slope is northwest toward the valley floor with a decline in elevation of 10 to 13 feet per mile.

The soils are characteristic of those found in a semiarid region with hot, dry summers and mild winters, the entire annual rainfall coming during the winter months. The typical soils are light colored in the surface layers, generally low in organic matter content, and grayish-brown, calcareous and more or less compact in the subsoils. There is an abundance of plant nutrients other than nitrogen, but the heavier soils tend to contain excessive amounts of neutral and alkaline salts. About one-third of the soils are well suited to cotton and potatoes and another sixth fairly satisfactory (Table 1).

The climatic characteristics of Northern Kern County are similar to the Mediterranean-type--hot, dry summers and mild, moist winters found throughout the southern San Joaquin Valley of California. The Coast Range, the Sierra-Nevada, and Tehachapi Mountains form isolating walls on three sides, reducing the influence of outside climatic conditions to a minimum. Weather records reveal a pattern of hot summer weather, with

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Factors Affecting Agricultural Production.--The factors

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separately. Topography, soil and climate, therefore, are considered
in this and the following sections.

The topography in the vicinity of Jackson Farm County is considered
very favorable for irrigated agriculture; the movement of soil is
fast and the irrigation is usually limited to establishing adequate "tail."
The general slope is northwest toward the valley floor with a decline in
elevation of 10 to 15 feet per mile.

The soils are characteristic of those found in a certain region with
hot, dry summers and mild winters, the entire annual rainfall coming during
the winter months. The typical soils are light colored in the surface
layers, generally low in organic matter content, and medium-textured.
Siltstones and sands or loess composed in the subsurface. There is an abundance
of plant remains other than nitrogen, but the heavier soils tend to
contain excessive amounts of natural and alkaline salts. About one-third
of the soils are well suited to cotton and potatoes and another sixth

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TABLE 1

Classification of Soil Series Based on Suitability
for Agricultural Use

Class I		Class II		Class III		Class IV		Total
Soils very well suited to fruit growing and truck farming.		Soils generally well suited for cotton and general farming, and less desirable for truck farming.		Soils less desirable for cotton growing and general farming.		Soils generally suitable only for grazing.		
Series	Per cent of total area	Series	Per cent of total area	Series	Per cent of total area	Series	Per cent of total area	
Hesperia	26.1	Cajon	2.0	Traver	12.8	Pond	9.1	
Hanford	4.9	Foster	.2	Chino	1.6	Fresno	1.9	
Greenfield	1.5	Adelanto	2.2			Hacienda	a/	
		Delano	20.1			Waukena	.1	
		Exeter	6.3			Milham	5.6	
		San Joaquin	2.2			Cuyama	.7	
		Madera	2.3			Tujunga	.2	
		Chualar	a/					
Total	32.5	Total	35.3	Total	14.4	Total	17.6	99.9 b/

a/ Less than .05 per cent.

b/ Riverwash accounts for .1 per cent.

Source of data: U.S. Department of Agriculture, Soil Survey, The Wasco Area California, August 1942. Washington, D.C.

maximum average temperature exceeding 90 degrees, from May through September. The winter temperatures are mild, with only the months of December and January showing an average minimum temperature of less than 32 degrees Fahrenheit. The growing season in the Vasco area is comparatively long. Killing frosts have occurred as late in spring as April 29 and as early in fall as October 1, but the average date for the last killing frost is March 11 and for the first, November 16, giving on the average a 250-day growing season. A growing season greater than 274 days can be expected about one year in four, while the probability of one shorter than 225 days is approximately the same.

Rainfall plays a dual role in agricultural production. It supplies moisture necessary for plant growth and affects field operations during certain months of the year when such operations must be performed, if optimum planting schedules are to be observed. In the first role, rainfall is of secondary importance in this area since virtually all the moisture necessary for plant growth must be supplied by irrigation from underground sources (at the time of this study) in light of the small annual rainfall and its seasonal pattern. The average seasonal rainfall total based on fifty years records is 6.34 inches with a seasonal total exceeding ten inches in only 5 years and a seasonal rainfall of less than four inches in only 7 years of the fifty studied. Virtually all the rainfall is received between December 1 and March 30, with an occasional storm in late November or early April. Rainfall is of prime importance in its second role during the period that land preparation and planting of potatoes must be accomplished and cotton seedbeds prepared. Climatological factors, therefore, further define the farming systems and enterprises selected for the organizations.

Since all crops in the study area are grown under irrigation with the exception of a small quantity of dry farmed grain, the quantity and quality of irrigation water is of prime importance. Irrigation water comes from three sources: rainfall, nearby rivers and streams, and the underground reservoir. The relatively unimportant contribution of local rainfall has been mentioned. That taken from rivers and streams is of some small importance in early spring for flooding some natural pasture found in the area. Since these two sources are relatively insignificant, the underground supplies have been drawn on heavily, and the water table

has gradually declined. The only apparent solution to the latter problem appears to lie in the introduction of water from "The Central Valley Project." In general, the quality of well water is good but with deeper wells and "softer" waters, new problems of water penetration have been introduced.

Biological Determinants

Northern Kern County is affected by approximately fifty different species of weeds and grasses. Of particular concern to the farm operator are White Horse Nettle (*Solanum elaeagnifolium*), Lambs Quarters (*Chenopodium album*), Wild Morning Glory (*Convolvulus arvensis*), Puncture Vine (*Tribulus terrestris*), Russian Thistle (*Salsola Koli*), Nutgrass (*Cyperus esculentus*), Johnson Grass (*Holcus halepensis*), Bermuda Grass (*Cynodon Dactylon*), Water Grass (*Echinochloa Crusgalli*), and Sandbur Grass (*Cenchrus paniculatus*). These weeds and grasses, if uncontrolled, will encroach on farm land leading to heavy losses through reduced crop yields, increased cultivation and irrigation costs, and increased ultimate eradication costs. Weed and grass problems are particularly acute when mechanical cotton harvesting is contemplated and with crops like sugar beets and potatoes where cultivation must be stopped relatively early in the growing period. Only constant alertness for infestations, continual cultivation and spraying of fence lines and roadsides will bring weeds and grasses under control.

The incidence of insect damage to principal crops is widespread when adequate control measures are not taken. Lygus bugs in cotton and tuber moths in potatoes are the two most damaging insects in this region. While dusting each season will bring both under control, it is not accomplished without significant cost increases.

Verticillium Wilt, a soil-borne fungus disease, is the principal disease attacking cotton in the southern San Joaquin Valley. Rotation with small grains provides the most economical control at the present time. Potatoes are attacked primarily by two fungus diseases, Scab and Lark. With these diseases, care in cultural practices and rotation is the most effective means of preventing their spread.

Size and Organization Characteristics.--Though varying in size from two or three acres to four and five thousand acres per farm, the largest number of farms cluster around the 80 and 160 acre units (Table 2). Over

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TABLE 2

Size Characteristics of 405 Cotton-Potato Farms in
Northern Kern County, California, 1949

Total Farm Size	Number of Farms	Average Cropland per Farm
(acres)		(acres)
0 - 29	21	17.6
30 - 59	76	35.4
60 - 89	68	67.6
90 - 119	30	93.7
120 - 149	29	119.6
150 - 179	40	149.6
180 - 239	33	192.3
240 - 299	27	240.9
300 - 399	24	302.4
400 - 499	12	388.4
500 - 699	20	530.1
700 - 999	13	746.6
1,000 and over	12	1,594.5

Source of data: USDA Production and Marketing Administration,
Bakersfield, from individual farm worksheet
records.

65 per cent of the farms are less than 180 acres in size yet this group occupies only about 24 per cent of the total cropland farmed. On the other hand, the 12 largest farms occupy about the same percentage of the total cropland while representing less than 3 per cent of the total farms. Of those farms smaller than 180 acres, 25 per cent could be classified as 80 acre farms and 15 per cent as 160 acre farms. A total of 40 per cent of those less than 180 acres were either 80 or 160 acre units. In terms of the total number of farms, nearly 27 per cent fell into one of the two categories. These comparisons reveal the relative importance of these two size groups in terms of the number of farm operators. Much of the data to be presented in this report is based on these two size groups because of these facts.

Turning to a consideration of organizational characteristics, the acreage devoted to cotton and potatoes on farms of various sizes is pertinent. Data concerning the relationships between per acre yields and size are available for the same 405 farms.

The combination of cotton and potatoes in all size groups utilizes more than three-quarters of the cropland (Table 3). On farms of less than 60 acres over 90 per cent of the land is devoted to cotton and potatoes. It is not possible to add the percentages meaningfully on small farms, however, because the smaller operators in many cases devote all of their limited acreages to one crop or the other.

While cotton tends to maintain about the same relative position in the farm organization regardless of size of farm, potatoes do not appear to duplicate this pattern. As size of farm increases to approximately 160 acres, cotton and potatoes bear roughly a 2 to 1 relationship in terms of acreage devoted to each enterprise. As size increases beyond 160 acres, cotton continues to occupy approximately two-thirds of the cropland but the potato acreage does not exhibit the same pattern of proportionate increase. This indicates that enterprises other than potatoes and cotton tend to become more important as size increases. Other than physical and economic forces help establish this pattern. Physical and economic determinants such as equipment capacities, water use, conditions of contract operations, and labor requirements bear heavily on the extent to which any given enterprise is expanded. But, the various federal regulations with respect to planted acreage and history establishment exert strong pressures

TABLE 3

Organization Characteristics of 405 Cotton-Potato Farms
in Northern Kern County, California, 1949

Total Farm Size (Acres)	Cotton			Potatoes		
	Average Acreage per Farm Reporting	Per cent of Cropland	Average Yield per Acre (lbs. lint)	Average Acreage per Farm Reporting	Per cent of Cropland	Average Yield per Acre (lbs.)
0 - 29	10.1	57.4	832	8.1	46.0	376
30 - 59	21.6	61.0	851	15.1	42.6	377
60 - 89	44.5	65.8	780	20.5	30.3	359
90 - 119	53.8	57.4	748	28.8	30.7	394
120 - 149	75.1	62.8	757	35.0	29.3	365
150 - 179	107.0	71.5	696	30.3	20.2	360
180 - 239	132.8	69.1	721	54.1	18.1	364
240 - 299	162.2	67.3	649	58.8	24.4	341
300 - 399	197.1	65.2	670	86.5	28.6	353
400 - 499	301.2	77.5	722	62.4	16.1	393
500 - 699	340.6	64.3	653	166.6	31.4	349
700 - 999	397.8	53.3	656	184.5	24.7	360
1,000 and over	1,078.0	67.6	635	214.7	13.5	413

Source of data: USDA Production and Marketing Administration, Bakersfield, from individual farm worksheet records.

NOTES ON THE PROGRESS OF THE WORK DURING THE YEAR 1900

1. The work of the year has been devoted to the study of the history of the Church in the United States, and to the preparation of a history of the Church in the United States, from the first settlement to the present time.	2. The work of the year has been devoted to the study of the history of the Church in the United States, and to the preparation of a history of the Church in the United States, from the first settlement to the present time.	3. The work of the year has been devoted to the study of the history of the Church in the United States, and to the preparation of a history of the Church in the United States, from the first settlement to the present time.	4. The work of the year has been devoted to the study of the history of the Church in the United States, and to the preparation of a history of the Church in the United States, from the first settlement to the present time.	5. The work of the year has been devoted to the study of the history of the Church in the United States, and to the preparation of a history of the Church in the United States, from the first settlement to the present time.	6. The work of the year has been devoted to the study of the history of the Church in the United States, and to the preparation of a history of the Church in the United States, from the first settlement to the present time.	7. The work of the year has been devoted to the study of the history of the Church in the United States, and to the preparation of a history of the Church in the United States, from the first settlement to the present time.
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THE HISTORY OF THE CHURCH IN THE UNITED STATES, FROM THE FIRST SETTLEMENT TO THE PRESENT TIME

on individual producers to expand or contract the acreage and production of various crops from year to year. The importance of this outside influence should not be underestimated.

The gradual, though irregular, decline in yield per acre of cotton as farm size increases is significant. Two reasons exist for this decline. First, there may be some small decline associated with more extensive operations; however, the variation in yield from farm to farm in any given size range is such as to cast considerable doubt on the reliability of this explanation. The primary reason for this pattern is found in the relationship between size of farm and location in the study area. Yields tend to be higher in the farming areas longest established and in these areas there are a large number of small farms. In the newer and typically outlying or fringe cotton areas the acreages are larger and yields smaller. Therefore, some caution should be exercised in the interpretation of these yield data.

With respect to potato yields, a different set of institutional factors exists to aid in explaining the apparent yield-size relationships. No significant change in potato yields in association with farm size is evident until the large farms are studied. For farms of 1,000 acres or more, potato yields tend to increase. The apparent reason is the tendency toward vertical integration in potato production by larger producers. These producers not only specialize in the growing of potatoes but, also usually own and operate a packing shed. In a few cases their operations extend to the marketing phase. When this is true, the entire production and marketing process can be planned and coordinated, thus insuring proper timing of all operations. Potatoes can be dug at the optimum time and all subsequent operations can be performed with no delays. Such an arrangement insures a better end-product with less loss and delay. The locational factor no longer provides an explanation for variation in the yield of potatoes. Their lesser tolerance of adverse soil conditions, particularly salt concentrations has brought about the necessary adjustment in production to the favorable soils.

Input-Output Relationships for Selected Enterprises.--With the natural determinants of production and the general level of advancement in production techniques known for the study, it is possible to establish a set of production schedules, commonly referred to as physical input-output relationships. It is not feasible to include all variations in production

an individual member as to extend or contract the volume of its output of
various other goods year to year. The importance of this individual
decision is emphasized.

The growth, the size, the shape, the time in which it grows, the
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that, though many of the same small units are associated with some of the
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practices for each enterprise. It is essential, however, to include those variations arising from differences in scale of operations and organization. A close approximation of the effects of scale in the production technique **associated with a** given enterprise can be made by holding all other influences constant, although practical difficulties may make precise measurement impractical.

Based on the information obtained in the field, five typical but synthetic farms, two of 80 acres, two of 160 acres, and one of 320 acres were developed. The cropping pattern and acreage ratios were approximately constant for three of the farms, one in each size group, to permit the study of variations associated with scale. The level of managerial ability relative to size was assumed to be equal in each case. Then, for each size, the typical equipment, power units, irrigation systems, labor supply, etc., were synthesized in order to show the effects of scale on physical inputs, and on cost per unit of input and output. The basic physical resources and the corresponding investment represented for these five farms are presented in Appendix Tables 1 through 5. Having the resources available to each operator specified, it is then possible to establish a synthetic "standard" of typical inputs for a given output for each enterprise on each size of farm. These inputs and outputs are typical in the sense that they represent the modal or most prevalent production pattern; that is, in operations performed, timing and method of performing these operations, rates of performance, quantities of inputs, and yields obtained.

Standards of inputs and outputs and calendars of operations have been prepared for eleven of the most important crops, in terms of acreage, for the area studied (Appendix Tables 6 through 16). The eleven crops examined are: cotton, potatoes, alfalfa, milo, barley, sugar beets, onions, dry beans, safflower, castor beans, and field corn. For this report, the 160 acre farm was considered the basic unit and a standard for each of the eleven enterprises was established for this size. In addition, standards for cotton, potatoes, alfalfa, and milo typical of the 80 acre farming unit were prepared (Appendix Tables 17 through 20). The principal difference between the 160 and the 80 acre farms is in the available power units, which in turn is reflected in the performance rates.

The information contained in indicated tables is largely self-explanatory, but a brief summary of their organization and content may be helpful. In

A direct comparison of the effects of scale in the production technique
associated with a given enterprise can be made by holding all other

Based on the information obtained in the field, five typical
synthetic farms, two of 50 acres, two of 100 acres, and one of 250 acres
were developed. The growing pattern and acreage ratios were approximately
constant for three of the farms, one in each size group, to permit the study
of variations associated with scale. The level of managerial ability
relative to size was assumed to be equal in each case. Then, for each size,
the typical equipment, power units, irrigation systems, labor supply, etc.,
were synthesized in order to show the effects of scale on physical inputs
and on cost per unit of input and output. The basic physical resources and
the cost per unit of input and output are shown in Table 1.

In Appendix Tables 1 through 5. Having the resources available to each
operator specified, it is then possible to establish a synthetic "enterprise."
of typical inputs for a given output for each enterprise on each size of
farm. The inputs and outputs are typical in the sense that they represent
the model or average production pattern for the size of operations.
cultivated, planted and method of performing these operations, nature of
performance, quantities of inputs, and yields obtained.

Quantities of inputs and outputs and estimates of operations have been
prepared for eleven of the most important crops, in terms of acreage, for
the area studied (Appendix Tables 6 through 12). The eleven crops examined

corn, alfalfa, soybean beans, and field corn. For the wheat, the 50
acre farm was considered the basic unit and a standard for each of the
other enterprises was established for this size. In addition, standards
for cotton, potatoes, alfalfa, and milk typical of the 50 acre farming unit
were prepared (Appendix Tables 13 through 17). The principal differences
between the 50 and the 100 acre farms is in the variable power units, which
in turn is reflected in the performance ratios.

The information contained in Appendix Tables is largely self-explanatory,
but a brief summary of their organization and content may be helpful. In

all cases, these standards are organized on a per acre basis for convenience in analyzing and comparing various enterprises. The per acre yield on which each standard of inputs is calculated appears in the title of the table. The period of time given beside each operation in the column labeled "Dates" refers to the period during the season when the particular operation is typically performed. Once the planting date is established the operational dates become more fixed, since the optimum time lapse between such operations as irrigating and cultivating is then rather narrowly defined.

The identifying letters used for the tractors require brief explanation. In order to summarize the raw data obtained on the tractors operated by each producer, a system of letters and numbers was devised to include all sizes and makes of tractors. Only three sizes are used in these tables, W-2, W-3, and DT-3. A W-2 tractor is a wheel tractor with a rated drawbar horsepower of between 15 and 20 horsepower. A W-3 tractor is likewise a wheel tractor but with a rated horsepower of between 21 and 27 horsepower. The DT-3 is a diesel track layer with rated drawbar horsepower between 19 and 23 horsepower.^{5/}

Where contract operations are mentioned, reference is made to the practice of hiring these operations done either by commercial contractors or by other farmers owning the necessary equipment.^{6/} Performance rates and physical requirements reported in these tables are based on sample data obtained from farmers interviewed. Sufficient numbers of farmers were using the same sizes of tractors and equipment to provide fairly large samples for computation of these rates.^{7/} In the few cases where insufficient evidence was available, data from other areas where similar conditions prevail were used to verify or strengthen the results obtained.

^{5/} The rated drawbar horsepowers were taken from results of the Nebraska tractor tests where models had been tested. In cases where models were not yet reported on in the results of these tests, data furnished by the manufacturers had to be substituted.

^{6/} The rates charged for various jobs by contractors are shown in subsequent tables.

^{7/} In all instances performance rates were taken for given fields of known acreage and the rates reduced to a per acre basis. This technique greatly reduces the margin of error in per acre figures and permits the quoting of performance rates in fractions of hours with greater accuracy than when the data are obtained on a per acre basis in the field.

A comparison of the labor, water, and tractor requirements per acre for the several enterprises indicates which are heavy consumers of water, labor, and tractor (and machinery) resources. This comparison is made for the 160 acre farm for those enterprises for which standards have been constructed (Table 4). Cotton draws relatively heavily on labor resources, particularly during the picking season if the cotton is hand picked. Likewise, the cotton enterprise requires the most tractor hours per acre because of the large number of cultivations carried out. On this point, it should be explained that the data on tractor inputs may be misleading in that crops such as onions may require extensive cultivation but spraying has been developed to replace much of the cultivation. The wide variation in water consumption by various enterprises is also to be noted. Alfalfa and sugar beets are the heavy water consumers, principally because of their long growing season, while barley and beans require relatively little water.

Enterprise Interrelationships.---The physical requirements for producing given crops and the timing of the operations for each enterprise have been presented. It is important to examine the manner in which these enterprises relate one to the other. A knowledge of such relationships is essential when planning the farm organization in order to avoid conflicts in the use of various equipment, labor, and water resources and yet utilize these same resources to the fullest extent.

Three types of interrelationships deserve consideration--competitive, supplementary, and complementary. Enterprises which compete for or conflict in the use of resources of the farmer are said to be competing. Those which require the same resources but at different (and non-conflicting) times may be referred to as supplementary or noncompeting enterprises. If enterprises possess features which make them valuable in that they contribute to the productiveness of some other enterprise, they are known as complementary enterprises. A given enterprise may bear all three relationships to another or to several other enterprises concurrently, depending on which production resource is in question.

A study of these relationships helps further to understand why particular enterprises come to be associated in farm organizations. For example, cotton and potatoes compete for only land and even here the competition is not at all precise. Some producers are experimenting with

A comparison of the two series, and the results of the analysis of variance, are given in Table I. The results show that the two series are significantly different at the 1% level of significance. This is due to the fact that the two series are not normally distributed and the variance of the two series is not equal.

It is also noted that the two series are not normally distributed and the variance of the two series is not equal. This is due to the fact that the two series are not normally distributed and the variance of the two series is not equal. This is due to the fact that the two series are not normally distributed and the variance of the two series is not equal.

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TABLE 4

Comparative Physical Inputs Per Acre of Labor, Tractor Power, and Water
for Selected Crops on 160-Acre Farm Units in the
Northern Kern County Study Area

Crops	Labor inputs ^{a/} (man-hours)	Tractor power inputs (tractor hours)	Water inputs (acre-inches)
Alfalfa	10.3	4.6	63.4
Beans	17.5	6.5	22.8
Barley	3.8	1.4	19.2
Castor beans	13.1	3.5	32.0
Cotton	115.6	7.9	38.4
Field corn	14.2	3.7	43.2
Milo	13.0	4.2	27.6
Onions	191.1	5.4	32.0
Potatoes	56.3	4.9	30.0
Safflower	13.0	5.3	30.0
Sugar beets	37.7	7.1	72.0

^{a/} Including hand weeding, hoeing, chopping, thinning, and hand harvest labor, usually contracted for on a piece-work basis. Does not include labor which is used with a mechanized contract operation such as a potato digger, hay baler, barley or bean combine, etc.

Source of data: Tables of Standards of Inputs and Costs for individual enterprises.

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double cropping of cotton after early potatoes but as yet this practice is not generally recommended. Usually, it delays the cotton planting beyond the recommended date. The excellent use made of such important resources as water and irrigation labor, motive power and equipment when both cotton and potatoes are in the farm organization serves to illustrate the supplementary relationship. In this area, a complementary relationship takes one or more of three forms. It may appear through a more complete utilization of the soil nutrients as with alfalfa and cotton in a rotation. Or it may occur when fertilizers applied to one crop are not fully utilized and are beneficial to the following crop. Milo following potatoes as a double crop illustrates this relationship. Almost all enterprises tend to be complementary in the sense that they produce a residue which, when turned under, adds to the humus content of the soil. The suppression of weeds through rotation might also be added as a complementary relationship. In other farming areas complementary relationships assume greater importance particularly where animal residues provide fertilizer for crops produced on the farm.

From the timing of operations, the physical resources used, and the farm organization in question, it is possible to establish the many enterprise relationships for any given farm. Such information, and an effective understanding of its implications, is vital to the economic success of any farming operation.

Economic Determinants

Prices and Cost Rates.---The following discussion of prices and costs is required to introduce money values which, when combined with physical input data already developed, will yield specific costs of production for selected crops. "Prices", as used here, refer to prices paid by farmers for materials and services. Cost rates are annual costs for the use of equipment such as tractors and underground irrigation systems that are not consumed in one production year. Price information was assembled from buyers and sellers of the materials and services in question. These sources included labor and job contractors, farm supply houses, fuel and oil distributors, power companies, agricultural chemical companies, and farmers. Cost rates were computed from basic data obtained on the farms and from equipment dealers, bankers, pump companies, well drillers,

is not a scientific investigation. It is a study of the human mind, and the human mind is not a machine. It is a living, breathing, feeling, thinking, and acting entity. It is a complex of many factors, and it is constantly changing. It is not a static thing, but a dynamic one. It is not a thing that can be studied in a laboratory, but a thing that can only be studied in the human mind itself.

and relations are in the human organization, and it is the human organization that is the subject of the study.

There are many other factors that are involved in the human organization. There are the physical factors, such as the brain, the nerves, and the muscles. There are the psychological factors, such as the mind, the emotions, and the personality. There are the social factors, such as the family, the community, and the culture. There are the environmental factors, such as the climate, the geography, and the history. All of these factors are interrelated, and they all contribute to the human organization. It is a complex system, and it is constantly changing. It is not a static thing, but a dynamic one. It is not a thing that can be studied in a laboratory, but a thing that can only be studied in the human mind itself.

From this study of the human organization, it is possible to develop a theory of human behavior. This theory can be used to predict human behavior, and it can be used to control human behavior. It is a powerful tool, and it is a valuable asset. It is a thing that can be studied in a laboratory, and it is a thing that can be studied in the human mind itself.

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irrigation pipe manufacturers and installing organizations.

Prices of Materials and Services.--Pertinent materials and services prices as of 1949 for the local area studied have been classified into five groups: labor costs, contract operations costs, materials costs, power costs, and miscellaneous costs. A brief discussion of each group and a table presenting the prices and costs is presented below. Farm products prices are not given here since the evaluation of earnings will be considered in subsequent publications.

Labor costs.--Two problems arose in determining rates of pay for specific tasks performed by farm laborers: (1) most hired laborers on farms performed more than one task, and (2) methods of payment varied so widely as to make interfarm comparisons difficult. These problems were partly overcome by (a) reducing items such as perquisites to a monetary base, (b) adjusting bonuses and monthly salaries to per-hour rates, and (c) analyzing total salary payments in terms of time spent at various jobs for which the rates of pay vary, and determining what per hour payments were equivalent to the total payment. The usual basis of payment for each of the common tasks together with the rate of pay then were summarized (Appendix Table 21).

Contract Operations Costs.--Farms too small to make economic utilization of larger pieces of equipment within the confines of the farm commonly contract the services of such equipment. Charges for the services of this equipment do not vary widely except where field or crop conditions are abnormal. Farms of the size considered in this report usually contract one or more operations in most enterprises. An exception is the producer who contracts outside work with his equipment in addition to using it in his own farming operation. The charges and the basis for these service charges also are presented by enterprises and operations (Appendix Table 22). These expenses bulk large in the total cash outlay for operators of smaller farms but it is more economical for them to contract for the work in most cases than to bear the investment expenses of owning and operating machinery used at less than average capacity.

Materials Costs.--Included under materials are seed, dusts and sprays, fertilizers and soil conditioners, and fuels and lubricants (Appendix Table 23). Prices of these items to producers tend to be competitive but it should be noted that both cash and quantity discounts are available

prices as of 1949 for the 1941 area studied have been classified into three groups: labor costs, material costs, and miscellaneous costs. A brief discussion of each group and a table presenting the prices and costs is presented below. Table 22. Product prices are not given here since the evaluation of returns will be completed in subsequent publications.

Factor prices.--The problems arise in determining rates of pay for specific tasks performed by farm laborers: (1) most hired laborers on farms performed more than one task, and (2) methods of payment varied so widely as to make inter-farm comparisons difficult. These problems were partly overcome by (a) relating farms such as population to a monetary base, (b) adjusting bonuses and monthly salaries to certain rates, and (c) analyzing total salary payments in terms of the amount of various jobs for which the rates of pay vary, and determining what was being paid were equivalent to the total payment. The usual basis of payment for each of the common tasks to either with the rate of pay that was suggested

(Appendix Table 22).

Capital: Construction Costs.--Farms too small to make accurate addition of farm pieces of equipment within the confines of the farm normally contract the services of such equipment. Charges for the services of this equipment do not vary widely except where field crop conditions are abnormal. Farms of the size considered in this report usually contract one or more operators in most enterprises. An exception is the farmer who contracts out the work with the equipment in addition to using it himself. This was the case for the farms in the study. These services were also represented by depreciation and operation (Appendix Table 22). These expenses are listed in the total cost column for each of the farms but it is not economical for them to contract for the work is most cases than to bear the investment expenses of owning and operating machinery used at less than average capacity.

Land: Land Costs.--Included water materials and seed, fuels and repairs, fertilizers and soil conditioners, and fuels and lubricants (Appendix Table 22). Prices of these items to producers tend to be competitive and it should be noted that both cost and quantity accounts are available.

on many items. Such discounts, particularly the quantity discounts, become important sources of savings to larger producers.^{8/}

Power Costs.--When ground water is virtually the only source for irrigation, pumping water to the surface represents a sizeable expenditure in producing all irrigated crops. Over 90 per cent of the pumping units are driven by electric motors of sizes varying from 10 to 100 horsepower. The electric power to operate these motors is supplied by The Pacific Gas and Electric Company or Southern California Edison, at rates varying according to motor rating and kilowatts used (Appendix Table 24).

Miscellaneous Costs.--Included under miscellaneous costs which must be borne by the various enterprises in the farm organization are land taxes, workmen's compensation insurance, interest on investment in land, and, for perennial crops, depreciation on the planting.

Land tax rates for the area, based on a study of the records and information from the County Assessor, were set at \$6.25 per year per acre though some variation existed. Differences in school rates rather than land classes were largely responsible for the variation. Workmen's compensation insurance rates were \$1.10 per \$100 of payroll at the time this study was conducted. The establishment of an interest charge for investment in land involved two decisions: (1) what value to place on the land and (2) what interest rate to use in computing the annual interest charge. While recent sales of agricultural properties indicate values as high as \$500 per acre and more, the figure established for the computation of interest was \$300. This is considered to be more in line with long-term land values. An interest rate of 5 per cent was selected on the basis of alternative uses for the equivalent money.

Charges for depreciation of stand in computing costs of producing perennial crops assumes considerable importance when the crop is one of two or three years duration and/or when the initial expense of establishing

^{8/} Cash discounts vary from 1 to 5 per cent depending on the material. Quantity discounts are particularly important in fuels and lubricants. For example, gasoline sold for \$.018 less per gallon in quantities of 550 gallons or greater. The saving on diesel fuel in quantities this large amounted to \$.01 per gallon. Grease sold for \$.01 per pound less when purchased in 110 lb. containers. These savings are reflected in the cost tables computed in later sections of this report.

the planting, as with tree crops, may be large. In this study, the problem was one of establishing an alfalfa stand which normally would be expected to be removed after three years of production. In keeping with this production period, the cost of establishing the alfalfa stand to the time of the first cutting was calculated and prorated over three years. The usual methods of establishing the stand in this area was used, together with the cost items as outlined above. The initial cost of obtaining the stand was calculated to be \$39.14 per acre. The depreciation charge would therefore be \$13.05 per acre per year, assuming a three-year productive life.

Overhead Costs

Four sources of overhead costs are to be recognized in operating an irrigated farm of the type found in this area: those incurred in operating (1) tractors, (2) farm implements, (3) farm pumping plants, and (4) underground irrigation systems. These costs have been computed on an annual basis for typical units found on the farms studied (Appendix Tables 25 through 28). The overhead cost for the irrigation system on a 320 acre farm was omitted since it was found to be typically twice that required on a 160 acre farm.

The same general method was used in establishing overhead cost data for the four sets of resources. First-costs were obtained by applying dealer-supplied prices to typical equipment found on the sample farms. Equipment dealers indicated that a salvage value of 15 per cent is normal for tractors and farm implements. Average values were established by adding the salvage value to the first cost and dividing the total by two. Where no salvage was present, as for portions of the well and pump, the first cost was divided by two. Depreciation was calculated by the straight-line method on the difference between the first cost and the salvage value. A reasonable life for each piece of equipment was established by examining present equipment age and condition and consultation with dealers. In calculating the interest charges, 5 per cent was again used as the rate. A study of tax and insurance charges on farm tractors and equipment indicated that a charge of 1 per cent per year of the original cost approximated the total of these two charges. Data on taxes and insurance on wells, pumps, and underground systems were obtained from the County Tax Office and from agents. The shelter charge for tractors was computed according to space occupied and the cost incurred

in erecting and maintaining such shelter.

The influence of arbitrary elements entering the calculations of overhead costs must not be minimized. Appropriate lengths of life and annual cost rates are difficult if not impossible to establish. The interactions between annual use, years of life, maintenance and repair policies, and appropriate depreciation rates vary significantly from farm to farm. Furthermore, the relative importance given to obsolescence and depreciation differs widely from operator to operator. Finally, the researcher is not in a position to assess the individual farm operator's financial position nor his appraisal of the future. Therefore, any estimate of the farmer's view with respect to risk and uncertainty is strictly arbitrary. For these reasons, any cost estimates based on the arbitrary assumptions which must be made with respect to the above conditions must be viewed as static long run costs subject to such modification as might arise from any shift in the assumed data on which the calculations are based.

Operating Costs for Power Units, Machinery, and Pumping Plants.--Per hour operating costs for tractors, equipment, and pumping plants on each of the five farms have been computed for later analysis (Tables 5-7). Operating costs in these tables are composed of overhead and variable costs, the latter directly reflecting variation in annual use. Overhead costs were developed in the previous section. Methods used in calculating variable expenses--fuel, oil, grease, repairs, and servicing--are outlined below.

Annual fuel, oil, and other oil and grease bills for tractors were obtained by multiplying the annual use by the consumption per time unit and applying the prices contained in previous tables.^{2/} An arbitrary method of estimating repairs for tractors has been used. The results obtained by this method were supported by the experiences of producers in the area as evidenced

^{2/} A study of fuel consumption on tractors operating in this area yielded the following fuel consumption data:

W-2, 17.5 gallons of gasoline per 9 hours of running time for an average load.

W-3, 25.0 gallons of gasoline per 9 hours of running time for an average load.

DT-3, 18.0 gallons of diesel fuel per 9 hours of running time for an average load.

Oil consumption, including a prorated share for changes, was found to approximate 1.5 gallons per 9 hour day for the DT-3, .9 gallon for the W-3, and .8 gallon for the W-2. Other grease and oil consumption was estimated at $\frac{1}{2}$ lb. per 9 hour day.

TABLE 5
Comparative Costs of Operating Farm Tractors on 80, 160, and 320
Acre Farms with Selected Organizations

Farm Tractors and Cost Items	I (160 Acres)			II (160 Acres)			III (80 Acres)			IV (80 Acres)			V (320 Acres)		
	Total Cost	Hours oper- ated	Cost per hour oper- ated	Total Cost	Hours oper- ated	Cost per hour oper- ated	Total Cost	Hours oper- ated	Cost per hour oper- ated	Total Cost	Hours oper- ated	Cost per hour oper- ated	Total Cost	Hours oper- ated	Cost per hour oper- ated
W-2															
Overhead a/				\$216.60			\$216.60						\$216.60		
Fuel				205.13			210.83						311.58		
Cylinder Oil				42.77			43.96						64.96		
Other Oil and Grease				5.05			5.19						7.67		
Repairs				31.19			31.19						31.69		
Servicing				13.46			13.84						20.45		
Total				\$514.20	712.8	.72	\$521.61	732.6	.71				\$652.95	1082.7	.60
W-3															
Overhead a/	\$362.73									\$362.73			\$362.73		
Fuel	234.72									270.58			269.36		
Cylinder Oil	34.99									40.34			44.22		
Other Oil and Grease	3.82									4.40			4.64		
Repairs	74.70									74.70			52.29		
Servicing	9.79									11.29			12.38		
Total	\$720.75	518.4	1.39							\$764.04	597.6	1.28	\$745.62	655.2	1.14
DT-3															
Overhead a/				\$435.40			\$435.40						\$435.40		
Fuel				59.99			42.34						42.90		
Cylinder Oil				33.41			23.59						23.90		
Other Oil and Grease				2.10			1.49						1.50		
Repairs				62.79			62.79						62.79		
Servicing				8.25			5.83						5.90		
Total				\$601.94	297.0	\$2.03	\$571.44	209.7	\$2.72				\$572.39	212.4	\$2.69

a/ Depreciation, interest, taxes, insurance, and shelter.

1. Name
 2. Address
 3. City
 4. State
 5. Zip
 6. Phone
 7. Age
 8. Sex
 9. Religion
 10. Education

11. Occupation
 12. Marital Status
 13. Number of Children
 14. Date of Birth
 15. Date of Marriage

16. Date of Interview
 17. Interviewer's Name
 18. Interviewer's Title
 19. Interviewer's Organization
 20. Interviewer's Address

21. Date of Birth
 22. Date of Marriage
 23. Date of Interview
 24. Interviewer's Name
 25. Interviewer's Title

26. Interviewer's Address
 27. Interviewer's Phone
 28. Interviewer's Organization
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31. Date of Birth
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41. Date of Birth
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61. Date of Birth
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71. Date of Birth
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 73. Date of Interview
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 78. Interviewer's Organization
 79. Interviewer's Title
 80. Interviewer's Name

81. Date of Birth
 82. Date of Marriage
 83. Date of Interview
 84. Interviewer's Name
 85. Interviewer's Title

86. Interviewer's Address
 87. Interviewer's Phone
 88. Interviewer's Organization
 89. Interviewer's Title
 90. Interviewer's Name

91. Date of Birth
 92. Date of Marriage
 93. Date of Interview
 94. Interviewer's Name
 95. Interviewer's Title

96. Interviewer's Address
 97. Interviewer's Phone
 98. Interviewer's Organization
 99. Interviewer's Title
 100. Interviewer's Name

101. Date of Birth
 102. Date of Marriage
 103. Date of Interview
 104. Interviewer's Name
 105. Interviewer's Title

106. Interviewer's Address
 107. Interviewer's Phone
 108. Interviewer's Organization
 109. Interviewer's Title
 110. Interviewer's Name

TABLE 6

Comparative Costs of Operating Farm Equipment on 80, 160 and 320
Acre Farms with Selected Organizations

Equipment	Farms									
	I		II		III		IV		V	
	(160 Acres)		(160 Acres)		(80 Acres)		(80 Acres)		(320 Acres)	
	Annual Cost	Per Hour Operated	Annual Cost	Per Hour Operated	Annual Cost	Per Hour Operated	Annual Cost	Per Hour Operated	Annual Cost	Per Hour Operated
8' Chisel	\$ 37.18	\$.56	\$ 38.18	\$.42					\$ 40.73	\$.27
10' Cultipacker	27.36	1.27	28.72	1.06	\$ 27.09	\$2.01	\$ 27.09	\$2.01	30.03	.55
2-Row Cultivator	23.47	.08	23.91	.05	23.29	.10	23.58	.09	25.70	.03
Fertilizer Attach.	10.20	.18	10.35	.15	10.12	.30	10.12	.30	11.14	.08
2-Row Lister	22.70	.43	22.70	.32						
4-Row Lister					37.86	1.91	37.85	1.27	42.06	.54
4-Row Lister Planter	55.00	2.04	55.90	1.63	54.68	3.20	55.80	2.38	60.15	.88
7' Offset Disk					42.23	.65	44.64	.42	45.53	.26
7 1/2' Offset Disk	51.41	.48	51.41	.35						
10' Offset Disk									69.32	1.10
2-Row Potato Planter and Fertilizer Attach.	80.72	2.19	86.02	1.41	78.01	4.56	81.09	3.00	84.65	1.54
2-16" 2-Way Plow					46.32	.74	46.32	.64		
7' Power Mower	25.93	.27			24.09	.96			26.73	.22
8' Side Delivery Rake	45.31	.51			42.26	1.68			46.78	.41
12' Spike Harrow	7.34	.19	7.56	.15	7.22	.36	7.29	.32	8.01	.11
2-Row Stalk Cutter	12.99	.34	13.20	.27	12.86	.57	12.86	.57	14.21	.14
6' Steel Roller	14.49	1.61	15.40	1.07	14.06	3.12	14.71	2.04	15.40	1.07
TOTAL	\$414.10		\$353.35		\$420.09		\$361.35		\$520.44	

TABLE 7
Comparative Costs of Pumping and Delivering Irrigation Water
on 80, 160 and 320 Acre Farms with Selected Organizations

	Total Overhead	Power	Oil and Grease	Repairs	Total
Farm I (160 Acres)					
Cost Per Year	\$1,418.19	\$1,912.02	\$ 66.00	\$263.81	\$3,660.02
Cost Per Crop Acre	9.45	12.75	.44	1.76	24.40
Cost Per Acre Foot of Water	2.61	3.52	.12	.49	6.74
Farm II (160 Acres)					
Cost Per Year	1,418.19	1,723.91	66.00	216.30	3,424.40
Cost Per Crop Acre	9.45	11.49	.44	1.44	22.82
Cost Per Acre Foot of Water	3.19	3.87	.15	.49	7.70
Farm III (80 Acres)					
Cost Per Year	809.41	979.46	41.25	131.25	1,961.37
Cost Per Crop Acre	10.79	13.06	.55	1.75	26.15
Cost Per Acre Foot of Water	3.23	3.91	.16	.52	7.83
Farm IV (80 Acres)					
Cost Per Year	809.41	1,020.38	41.25	190.71	2,061.75
Cost Per Crop Acre	10.79	13.61	.55	2.54	27.49
Cost Per Acre Foot of Water	3.01	3.80	.15	.71	7.67
Farm V (320 Acres)					
Cost Per Year	2,643.07	2,707.24	115.50	477.35	5,943.16
Cost Per Crop Acre	8.81	9.02	.39	1.59	19.81
Cost Per Acre Foot of Water	2.57	2.63	.11	.46	5.77

in other studies and as reported by farmers interviewed.^{10/} Servicing charges were computed by multiplying the amount of the driver's time devoted yearly to servicing by the wage rate of the driver.

The annual cost incurred in operating a piece of farm equipment (not self-powered) is the sum of overhead and repair costs. Repair costs are computed as for tractors with one minor exception.^{11/} Irrigation water costs include overhead on pumping plant and irrigation system, plus power, repairs, and oil and grease. Power charges are obtained by applying appropriate power rates to the power requirements based on annual use. (See Appendix Table 24.) Oil and grease charges are based on a flat rate per horsepower per day operated. Annual repair charges are a sum of repair charges for motor and pumps.^{12/}

These input and cost data are included to permit computing production costs on selected crops. The decline in cost per hour operated as the total operating time increases is very apparent (Table 5). The variation in tractor operating costs as farm size and organization vary is better illustrated by weighting the annual cost by the hours operated for each tractor in the organization and computing a composite per hour of operation cost for tractor power on each farm.

^{10/} The method used for estimating repairs is as follows: for 80 acre farms a flat 3 per cent of the original cost is used; for the 160 and 320 acre farms 3 per cent of the original cost is taken and then only 70 per cent of this amount is charged assuming that with the farm repair shops as equipped, the repair labor costs would be reduced 50 per cent with costs of parts remaining unchanged, and an average division of 60 per cent labor and 40 per cent parts on the typical repair bill.

^{11/} The annual use made of equipment on the 320 acre farms (Farm V) was considered as a standard. For other sizes and organizations, the repair costs were reduced in proportion to the difference in annual use for a given piece of equipment in the particular farm in question and the same piece of equipment in the 320 acre farm.

^{12/} An established method was used in calculating each. The annual repairs for motors were obtained by dividing $1/3$ of the first cost by 20,000 and multiplying the result by the number of hours run during the year. Pump repairs were obtained by dividing $1/4$ of the first cost by 11,000 and multiplying by the number of hours run.

Comparative Operation Costs for all Tractors
on the Five Farms of Selected Size and
Organization.

<u>Farm</u>	Weighted Average Cost per Hour Operated <u>a/</u>
Farm I (160 acres)	\$ 1.16
Farm II (160 acres)	1.11
Farm III (80 acres)	1.39
Farm IV (80 acres)	1.28
Farm V (320 acres)	1.01
<u>a/</u> Annual costs for each tractor are weighted by its annual use.	

Comparing farms similarly organized (I, III, and V) the costs per hour decline as size increases but minor organization differences are also reflected in these data. Also, the effects of purely organizational changes are in evidence in comparing the per hour operation costs on the W-3 tractor for farms III and IV. A reduction of eleven cents per hour is attained by altering the organization such that the annual tractor use is increased from 518.4 hours to 641.7 hours. In all of the three farms where the DT-3 is employed, the use made of this tractor has not been sufficient to reduce the per hour cost to a level reflecting a near unit capacity usage. Overhead costs are such as to demand a more intensive use of the DT-3 if cost of operation is to be considered economical.

The same conclusion can be drawn for equipment costs. For any given piece of equipment common to the organizations of all five farms, the cost per hour operated declines significantly as the size of farm increases (Table 6). This results from a more intensive utilization of the equipment on the larger farms. It is also clear that changes in farm organization on a given farm affect equipment costs significantly.

A study of the costs of pumping and transporting irrigation water on the farm also indicates that reduced costs with increasing farm size are to be expected (Table 7). It is to be noted, however, that organizational changes play a large part in changing water costs on a farm. Shifts from crops using moderate amounts to crops using large amounts of water tend to reduce per acre foot water costs largely because of the structure of power rates, but other factors such as labor costs and enterprise interrelationships

Cooperative Operation between all three
 on the five farms at different times
 of the year.

1.12	Form I (100 acres)
1.11	Form II (100 acres)
1.10	Form III (100 acres)
1.09	Form IV (100 acres)
1.08	Form V (100 acres)

Actual costs for each farm are included for its
 own use.

It is possible to have a more detailed study of the
 and in addition it is possible to have a more detailed study of the
 for farms I, II and III. A reduction of energy costs per hour is obtained by
 attending the organization such that the energy system use is increased.
 from 100% to 100% hours. In all of the three farms the 100%
 is achieved, the use of this method has not been subjected to various
 the system cost to a level reflecting a new and better system.
 various costs are used to determine a more intensive use of the 100% is
 cost of operation is to be considered economically.
 The same conclusion can be drawn from the same costs. The same
 of operation is to be considered economically. The same
 per hour operation is to be considered economically. The same
 (Table 1). All of the same costs are used to determine a more
 of the same costs. The same costs are used to determine a more
 to a given farm which is to be considered economically.
 A study of the same costs is to be considered economically. The same
 the same costs are used to determine a more intensive use of the 100% is
 be expected (Table 1). It is to be noted, however, that the
 various costs are used to determine a more intensive use of the 100% is
 other values are used to determine a more intensive use of the 100% is
 perhaps not more than the same costs are used to determine a more
 costs, but other factors may be included in the same costs.

must be considered in arriving at any net effects of such shifts.

Typical Production Costs Per Acre and Per Unit
for Cotton and Potatoes

The data presented in the previous sections for Northern Kern County have established: (1) the size and organizational characteristics of cotton-potato farms; (2) the natural factors bearing on agricultural production; (3) the physical input-output relationships for the principal enterprises; and (4) the price-cost pattern existing in the 1949-50 production year, including the derived annual costs per hour or per acre foot for power units, other farm equipment, and irrigation water. These data are now brought together and attention is focused on the typical costs^{13/} per acre and per unit of output for cotton and potatoes on the five farms described previously. Both size and organization influences on average unit production costs and on particular cost components are shown.

Given the farm size, farm organization, physical inputs and practices, any variation in prices paid by farm operators for factors of production will result in cost variation. These prices will vary with the general price level, with the price level of closely related goods and services, and as a result of specific conditions surrounding the price-making of each good and service. Therefore, these cost data presented are typical only in the sense that they reflect organization, size, practices, inputs, and prices found to exist in 1949 and early 1950. Changes in size and organizational structure tend to take place rather slowly but practices, inputs and prices may change rapidly with the introduction of new machines or techniques and with changing economic conditions.

To facilitate analysis and comparison, the inputs and their costs for cotton and potato production have been arranged in six groups, each group being subtotaled (Tables 8 through 17). These six groups are: labor, contracted and piece work, motive power, farm equipment, materials, and miscellaneous.

^{13/} Typical in the sense that they represent costs determined by the application of the most frequently observed cost rates for inputs to the most common practices and inputs for the farm organizations and sizes studied.

Costs for Producing Cotton.--An examination of the total cotton production costs per acre and per bale for the five farms indicates the influence of both organization and scale on these costs (Tables 8 through 12). Furthermore, it reveals that under 1949 conditions major differences in cost components were hidden by the approximate equality of total costs. On Farm I of 160 acres with cotton, potatoes and alfalfa the cost per acre for producing cotton was \$222.64 and per bale \$106.02. On a farm of only 80 acres but organized similarly, the cost per acre rose to \$233.03, resulting in a per bale increase to nearly \$111.00. The cost per acre on the 320 acre farm was \$216.30 and the per bale cost \$103.00. This indicates a reduction of approximately \$8.00 per bale as the farm size increases from 80 to 320 acres with nearly comparable organizations maintained. The important sources of these cost reductions are in motive power and water costs, with small savings occurring in farm equipment costs. Total motive power costs per acre decline from \$12.32 on the 80 acre farm to \$8.62 on the 320 acre farm. Water costs show a decline from \$25.06 to \$18.46 when comparing the 80 and 320 acre farms with similar organizations. These declines reflect primarily the more efficient use of physical facilities, but also slight savings accruing from purchasing and rate structures advantageous to larger farm operations.^{14/}

The influence of organization can be shown by comparing Farm I with Farm II and Farm III with Farm IV. Here the sizes remain the same but organizations vary. Cotton production costs on Farm I at \$222.64 per acre are only slightly lower than the \$223.88 shown for Farm II. Examination of components of total cost indicates a saving in water costs, but a significant part of this saving is offset by the increased motive power and machinery costs incurred on Farm I. The differences are explained entirely by organizational variations which are being reflected in resource utilization. On Farm I, the presence of alfalfa lengthens the irrigation

^{14/} These comparisons do not reflect scale differences alone. Minor organizational differences exist which tend to overstate slightly the cost advantages of scale between the 80 and 160 acre farm and understate those between the 160 and 320 acre farm. The comparison between the 80 and 320 acre farm more nearly reflect purely scale differences. Comparison of cost elements at this level is not hampered by these variations in organization between farms I, III, and V but income and net returns analysis would require exact comparability if results were to be at all indicative of scale relationships.

TABLE 8

Cost of Producing Cotton on Farm I (160 Acres)
(Yield: 2.1 bales per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	7.9	\$ 1.00	\$ 7.90
Irrigator	10.1	.80	8.08
General	1.3	.80	1.04
Total Labor			<u>17.02</u>
Contracted and Piece Work:			
Chopping	5.3	.75	3.98
Hoeing	3.8	.75	2.85
Picking, Hand a/			95.55
Dusting (2 times) b/			2.40
Defoliating c/			4.00
Ginning (\$12.79/bale)			26.86
Total Contracted and Piece Work			<u>135.64</u>
Motive Power:			
W-2	6.3	.71	4.47
DT-3	1.6	2.72	4.35
$\frac{1}{2}$ Ton Pick-up Truck (miles)	15.0	.07	1.05
Total Motive Power			<u>9.87</u>
Farm Equipment:			
2-Row Stalk Cutter	.5	.34	.17
7 $\frac{1}{2}$ ' Offset Disk Harrow	1.0	.48	.48
8' Chisel	.6	.56	.34
2-Row Lister	.5	.43	.22
2-Row Cultivator	4.4	.08	.35
12' Spike Harrow (3-4' sect.)	.3	.19	.06
4-Row Lister Planter	.3	2.04	.61
10' Cultipacker	.3	1.27	.38
2-Row Fertilizer Attach.	.7	.18	.13
5-Bale Cotton Trailer	1.0	.64	.64
Total Equipment			<u>3.38</u>

Continued-

Table 1
 Cost of Producing Cotton in Farm T (1950 Acres)
 (Values in \$/Acre)

Item	Value	Value	Value
Seed	1.00	1.00	1.00
Fertilizer	1.00	1.00	1.00
Pesticides	1.00	1.00	1.00
Harvesting	1.00	1.00	1.00
Marketing	1.00	1.00	1.00
Other	1.00	1.00	1.00
Total	6.00	6.00	6.00

Table 8 continued

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed (lbs.)	30.0	\$.06	\$ 1.80
Water (Acre feet)	3.2	6.74	21.57
Fertilizer (lbs.) <u>d/</u>	325.0	.0266	8.65
Dust (lbs.) <u>e/</u>	60.0	.0545	3.27
Total Materials			<u>35.29</u>
Miscellaneous:			
Compensation Insurance <u>f/</u>			.19
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			<u>21.44</u>
Total Cost per Acre			<u>\$222.64</u>
Total Cost per Bale			<u>\$106.02</u>

a/ Picking rate calculated on basis of 300# hand picked seed cotton per man per 9 hrs. picking, 1,400# seed cotton per bale of lint. Usually contracted for on cwt. seed cotton basis, the charge being \$3.25/cwt. in 1949 and 1950. For a yield of 2.1 bales, man hr. requirements would approximate 88.2 man hrs. per acre.

b/ Application charge only. Usual charge was 4¢/lb., 60# applied.

c/ Includes application and materials.

d/ 21% dry ammonium sulfate.

e/ 5% DDT, 50% Sulfur.

f/ \$1.10/\$100 payroll.

at least has not been abundant.

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TABLE 9

Cost of Producing Cotton on Farm II (160 Acres)
(Yield: 2.1 bales per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	7.9	\$ 1.00	\$ 7.90
Irrigator	10.1	.80	8.08
General	1.3	.80	1.04
Total Labor			<u>17.02</u>
Contracted and Piece Work:			
Chopping	5.3	.75	3.98
Hoeing	3.8	.75	2.85
Picking, Hand a/			95.55
Dusting (2 times) b/			2.40
Defoliating c/			4.00
Ginning (\$12.79/bale)			26.86
Total Contracted and Piece Work			<u>135.64</u>
Motive Power:			
W-2	6.3	.72	4.54
DT-3	1.6	2.03	3.25
$\frac{1}{2}$ Ton Pick-up Truck (miles)	15.0	.07	1.05
Total Motive Power			<u>8.84</u>
Farm Equipment:			
2-Row Stalk Cutter	.5	.27	.14
7 $\frac{1}{2}$ ' Offset Disk Harrow	1.0	.35	.35
8' Chisel	.6	.42	.25
2-Row Lister	.5	.32	.16
2-Row Cultivator	4.4	.05	.22
12' Spike Harrow (3-4' Sect.)	.3	.15	.04
4-Row Lister Planter	.3	1.63	.49
10' Cultipacker	.3	1.06	.32
2-Row Fertilizer Attach.	.7	.15	.10
5-Bale Cotton Trailer	1.0	.51	.51
Total Equipment			<u>2.58</u>

Continued-

Cost of Irrigating Cotton in Kern II (See Notes)
(Yield: 2.1 bales per acre)

Item	Quantity	Unit Price	Total Cost
Water	100	0.05	5.00
Electricity	100	0.10	10.00
Oil	100	0.20	20.00
Repairs	100	0.15	15.00
Depreciation	100	0.10	10.00
Interest	100	0.10	10.00
Insurance	100	0.10	10.00
Other	100	0.10	10.00
Total	100	0.80	80.00

Table 9 continued

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed (lbs.)	30.0	\$.06	\$ 1.80
Water (Acre feet)	3.2	7.70	24.64
Fertilizer (lbs.) <u>d/</u>	325.0	.0266	8.65
Dust (lbs.) <u>e/</u>	60.0	.0545	3.27
Total Materials			<u>38.36</u>
Miscellaneous:			
Compensation Insurance <u>f/</u>			.19
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			<u>21.44</u>
Total Cost per Acre			<u>\$223.88</u>
Total Cost per Bale			<u>\$106.61</u>

a/ Picking rate calculated on basis of 300# hand picked seed cotton per man per 9 hrs. picking, 1,400# seed cotton per bale of lint. Usually contracted for on cwt. seed cotton basis; the charge being \$3.25/cwt. in 1949 and 1950. For a yield of 2.1 bales, man hr. requirements would approximate 88.2 man hrs. per acre.

b/ Application charge only. Usual charge was 4¢/lb., 60# applied.

c/ Includes application and materials.

d/ 21% dry ammonium sulfate.

e/ 5% DDT, 50% Sulfur.

f/ \$1.10/\$100 payroll.

Date	Description	Amount	Total
1/1/20	1/1/20	1/1/20	1/1/20
1/1/20	1/1/20	1/1/20	1/1/20

At the time of the audit, the books of the company were found to be in a state of confusion and the accounts were not properly maintained. The following is a list of the accounts found to be in error:

- 1. Accounts receivable - \$100.00
- 2. Accounts payable - \$50.00
- 3. Cash - \$25.00
- 4. Inventory - \$75.00
- 5. Fixed assets - \$150.00
- 6. Liabilities - \$100.00
- 7. Equity - \$100.00

TABLE 10

Cost of Producing Cotton on Farm III (80 Acres)
(Yield: 2.1 bales per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	8.0	\$ 1.00	\$ 8.00
Irrigator	12.5	.80	10.00
General	1.3	.80	1.04
Total Labor			<u>19.04</u>
Contracted and Piece Work:			
Chopping	5.3	.75	3.98
Hoeing	3.8	.75	2.85
Picking, Hand a/			99.55
Dusting (2 times) b/			2.40
Defoliating c/			4.00
Ginning (\$12.79/bale)			26.86
Total Contracted and Piece Work			<u>135.64</u>
Motive Power:			
W-3	8.0	1.39	11.12
$\frac{1}{2}$ Ton Pick-up Truck (miles)	15.0	.08	1.20
Total Motive Power			<u>12.32</u>
Farm Equipment:			
2-Row Stalk Cutter	.4	.57	.23
7' Offset Disk Harrow	1.0	.65	.65
2-16" 2-Way Plow	1.0	.74	.74
4-Row Lister	.3	1.91	.57
12' Spike Harrow	.3	.36	.11
4-Row Lister Planter	.3	3.20	.96
10' Cultipacker	.3	2.01	.60
2-Row Cultivator	4.4	.10	.44
2-Row Fertilizer Attach.	.7	.30	.21
5-Bale Cotton Trailer	1.0	1.28	1.28
Total Equipment			<u>5.79</u>

Continued-

TABLE 10.

THE EFFECT OF TEMPERATURE ON THE RATE OF
GROWTH OF THE LARVAE OF THE MOSQUITO

TEMPERATURE (°C.)	PERCENTAGE GROWTH	PERCENTAGE MORTALITY	REMARKS
10	100	0	Larvae hatched and grew normally.
15	100	0	Larvae hatched and grew normally.
20	100	0	Larvae hatched and grew normally.
25	100	0	Larvae hatched and grew normally.
30	100	0	Larvae hatched and grew normally.
35	100	0	Larvae hatched and grew normally.
40	100	0	Larvae hatched and grew normally.
45	100	0	Larvae hatched and grew normally.
50	100	0	Larvae hatched and grew normally.
55	100	0	Larvae hatched and grew normally.
60	100	0	Larvae hatched and grew normally.
65	100	0	Larvae hatched and grew normally.
70	100	0	Larvae hatched and grew normally.
75	100	0	Larvae hatched and grew normally.
80	100	0	Larvae hatched and grew normally.
85	100	0	Larvae hatched and grew normally.
90	100	0	Larvae hatched and grew normally.
95	100	0	Larvae hatched and grew normally.
100	100	0	Larvae hatched and grew normally.

Table 10 continued

Inputs	Units of Inputs per Acre (hours)	Cost-per Unit of Input	Total Cost
Materials:			
Seed (lbs.)	30.0	\$.06	\$ 1.80
Water (Acre feet)	3.2	7.83	25.06
Fertilizer (lbs) <u>d/</u>	325.0	.0266	8.65
Dust (lbs.) <u>e/</u>	60.0	.0545	3.27
Total Materials			<u>38.78</u>
Miscellaneous:			
Compensation Insurance <u>f/</u>			.21
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			<u>21.46</u>
Total Cost per Acre			<u>\$233.03</u>
Total Cost per Bale			<u>\$110.97</u>

a/ Picking rate calculated on basis of 300# hand picked seed cotton per man per 9 hrs. picking, 1,400# seed cotton per bale of lint. Usually contracted for on cwt. seed cotton basis; the charge being \$3.25/cwt. in 1949 and 1950. For a yield of 2.1 bales, man hr. requirements would approximate 88.2 man hrs. per acre.

b/ Application charge only. Usual charge was 4¢/lb., 60# applied.

c/ Includes application and materials.

d/ 21% dry ammonium sulfate.

e/ 5% DDT, 50% Sulfur.

f/ \$1.10/\$100 payroll.

Category	Item	Quantity	Value
Food	Wheat	1000	10.00
Food	Barley	500	5.00
Food	Oats	250	2.50
Food	Rye	125	1.25
Food	Corn	62.5	0.625
Food	Flour	31.25	0.3125
Food	Feed	15.625	0.15625
Food	Hay	7.8125	0.078125
Food	Straw	3.90625	0.0390625
Food	Stalks	1.953125	0.01953125
Food	Wheat	0.9765625	0.009765625
Food	Barley	0.48828125	0.0048828125
Food	Oats	0.244140625	0.00244140625
Food	Rye	0.1220703125	0.001220703125
Food	Corn	0.06103515625	0.0006103515625
Food	Flour	0.030517578125	0.00030517578125
Food	Feed	0.0152587890625	0.000152587890625
Food	Hay	0.00762939453125	0.0000762939453125
Food	Straw	0.003814697265625	0.00003814697265625
Food	Stalks	0.0019073486328125	0.000019073486328125
Food	Wheat	0.00095367431640625	0.0000095367431640625
Food	Barley	0.000476837158203125	0.00000476837158203125
Food	Oats	0.0002384185791015625	0.000002384185791015625
Food	Rye	0.00011920928955078125	0.0000011920928955078125
Food	Corn	0.000059604644775390625	0.00000059604644775390625
Food	Flour	0.0000298023223876953125	0.000000298023223876953125
Food	Feed	0.00001490116119384765625	0.0000001490116119384765625
Food	Hay	0.000007450580596923828125	0.00000007450580596923828125
Food	Straw	0.0000037252902984619140625	0.000000037252902984619140625
Food	Stalks	0.00000186264514923095703125	0.0000000186264514923095703125
Food	Wheat	0.000000931322574615478515625	0.00000000931322574615478515625
Food	Barley	0.0000004656612873077392578125	0.000000004656612873077392578125
Food	Oats	0.00000023283064365386962890625	0.0000000023283064365386962890625
Food	Rye	0.000000116415321826934814453125	0.00000000116415321826934814453125
Food	Corn	0.0000000582076609134674072265625	0.000000000582076609134674072265625
Food	Flour	0.00000002910383045673370361328125	0.0000000002910383045673370361328125
Food	Feed	0.000000014551915228366851806640625	0.00000000014551915228366851806640625
Food	Hay	0.0000000072759576141834259033203125	0.00000000072759576141834259033203125
Food	Straw	0.00000000363797880709171295166015625	0.000000000363797880709171295166015625
Food	Stalks	0.000000001818989403545856475830078125	0.0000000001818989403545856475830078125
Food	Wheat	0.0000000009094947017729282379150390625	0.00000000009094947017729282379150390625
Food	Barley	0.00000000045474735088646411895751953125	0.000000000045474735088646411895751953125
Food	Oats	0.000000000227373675443232059478759765625	0.0000000000227373675443232059478759765625
Food	Rye	0.0000000001136868377216160297393798828125	0.00000000001136868377216160297393798828125
Food	Corn	0.00000000005684341886080801486968994140625	0.000000000005684341886080801486968994140625
Food	Flour	0.000000000028421709430404007434844970703125	0.0000000000028421709430404007434844970703125
Food	Feed	0.0000000000142108547152020037174224853515625	0.00000000000142108547152020037174224853515625
Food	Hay	0.00000000000710542735760100185871124267578125	0.000000000000710542735760100185871124267578125
Food	Straw	0.000000000003552713678800500929355621337890625	0.0000000000003552713678800500929355621337890625
Food	Stalks	0.0000000000017763568394002504646778106689453125	0.00000000000017763568394002504646778106689453125
Food	Wheat	0.00000000000088817841970012523223890533447265625	0.000000000000088817841970012523223890533447265625
Food	Barley	0.000000000000444089209850062616119452667236328125	0.0000000000000444089209850062616119452667236328125
Food	Oats	0.0000000000002220446049250313080597263336181640625	0.00000000000002220446049250313080597263336181640625
Food	Rye	0.00000000000011102230246251565402986316680908203125	0.000000000000011102230246251565402986316680908203125
Food	Corn	0.000000000000055511151231257827014931583404541015625	0.0000000000000055511151231257827014931583404541015625
Food	Flour	0.0000000000000277555756156289135074657917022705078125	0.00000000000000277555756156289135074657917022705078125
Food	Feed	0.00000000000001387778780781445675373289585113525390625	0.000000000000001387778780781445675373289585113525390625
Food	Hay	0.0000000000000069388939039072283768664479255676171875	0.00000000000000069388939039072283768664479255676171875
Food	Straw	0.00000000000000346944695195361418843322396278380859375	0.000000000000000346944695195361418843322396278380859375
Food	Stalks	0.000000000000001734723475976807094216611981391904296875	0.0000000000000001734723475976807094216611981391904296875
Food	Wheat	0.0000000000000008673617379884035471083059906959521484375	0.00000000000000008673617379884035471083059906959521484375
Food	Barley	0.00000000000000043368086899420177354415299534797607421875	0.000000000000000043368086899420177354415299534797607421875
Food	Oats	0.000000000000000216840434497100886772076497673988037109375	0.0000000000000000216840434497100886772076497673988037109375
Food	Rye	0.0000000000000001084202172485504433860382488369940185546875	0.00000000000000001084202172485504433860382488369940185546875
Food	Corn	0.00000000000000005421010862427522169301912441849700927734375	0.000000000000000005421010862427522169301912441849700927734375
Food	Flour	0.000000000000000027105054312137610846509562209248504638671875	0.0000000000000000027105054312137610846509562209248504638671875
Food	Feed	0.0000000000000000135525271560688054232547811046242523193359375	0.00000000000000000135525271560688054232547811046242523193359375
Food	Hay	0.00000000000000000677626357803440271162739055231212615966796875	0.000000000000000000677626357803440271162739055231212615966796875
Food	Straw	0.000000000000000003388131789017201355813695276156063079833984375	0.0000000000000000003388131789017201355813695276156063079833984375
Food	Stalks	0.0000000000000000016940658945086006779068476380780315496669921875	0.00000000000000000016940658945086006779068476380780315496669921875
Food	Wheat	0.00000000000000000084703294725430033895342381903901577483349609375	0.000000000000000000084703294725430033895342381903901577483349609375
Food	Barley	0.000000000000000000423516473627150169476711909519507887416748046875	0.0000000000000000000423516473627150169476711909519507887416748046875
Food	Oats	0.0000000000000000002117582368135750847383559547597539437083740234375	0.00000000000000000002117582368135750847383559547597539437083740234375
Food	Rye	0.00000000000000000010587911840678754236917797737987697185418701171875	0.000000000000000000010587911840678754236917797737987697185418701171875
Food	Corn	0.000000000000000000052939559203393771184588988689938485927093505859375	0.0000000000000000000052939559203393771184588988689938485927093505859375
Food	Flour	0.0000000000000000000264697796016968855922944943449692429635467529296875	0.00000000000000000000264697796016968855922944943449692429635467529296875
Food	Feed	0.00000000000000000001323488980084844279614724717248462148177337646484375	0.000000000000000000001323488980084844279614724717248462148177337646484375
Food	Hay	0.000000000000000000006617444900424221398073623586242312408886688232421875	0.0000000000000000000006617444900424221398073623586242312408886688232421875
Food	Straw	0.0000000000000000000033087224502121106990368117931211562044433441162109375	0.00000000000000000000033087224502121106990368117931211562044433441162109375
Food	Stalks	0.0000000000000000000016543612251060553495184058965605781022216720581046875	0.00000000000000000000016543612251060553495184058965605781022216720581046875
Food	Wheat	0.00000000000000000000082718061255302767475920294828028905111083602905234375	0.000000000000000000000082718061255302767475920294828028905111083602905234375
Food	Barley	0.000000000000000000000413590306276513837379601474140144525555418014526171875	0.0000000000000000000000413590306276513837379601474140144525555418014526171875
Food	Oats	0.0000000000000000000002067951531382569186898007370700722627777090072630859375	0.00000000000000000000002067951531382569186898007370700722627777090072630859375
Food	Rye	0.00000000000000000000010339757656912845934490036853503613138885450363154296875	0.000000000000000000000010339757656912845934490036853503613138885450363154296875
Food	Corn	0.000000000000000000000051698788284564229672450184267518065694427251815771484375	0.0000000000000000000000051698788284564229672450184267518065694427251815771484375
Food	Flour	0.0000000000000000000000258493941422821148362250921337590328472136259078857421875	0.00000000000000000000000258493941422821148362250921337590328472136259078857421875
Food	Feed	0.00000000000000000000001292469707114105741811254606687951642360681295394287109375	0.000000000000000000000001292469707114105741811254606687951642360681295394287109375
Food	Hay	0.000000000000000000000006462348535570528709056273033439758211803406476971435546875	0.0000000000000000000000006462348535570528709056273033439758211803406476971435546875
Food	Straw	0.0000000000000000000000032311742677852643545281365167198791059017032384857177734375	0.00000000000000000000000032311742677852643545281365167198791059017032384857177734375
Food	Stalks	0.0000000000000000000000016155871338926321772640682583599395529508516192428588671875	0.00000000000000000000000016155871338926321772640682583599395529508516192428588671875
Food	Wheat	0.00000000000000000000000080779356694631608863203412917996977647542580962142943359375	0.000000000000000000000000080779356694631608863203412917996977647542580962142943359375
Food	Barley	0.000000000000000000000000403896783473158044316017064589984888237712904810714716796875	0.0000000000000000000000000403896783473158044316017064589984888237712904810714716796875
Food	Oats	0.0000000000000000000000002019483917365790221580085322949924441188564524053573583984375	0.00000000000000000000000002019483917365790221580085322949924441188564524053573583984375
Food	Rye	0.00000000000000000000000010097419586828951107900426614749622205942822620267867919921875	0.000000000000000000000000010097419586828951107900426614749622205942822620267867919921875
Food	Corn	0.000000000000000000000000050487097934144755539502133073748111029714113101339339599609375	0.0000000000000000000000000050487097934144755539502133073748111029714113101339339599609375
Food	Flour	0.0000000000000000000000000252435489670723777697510665368740555148570565506696697998046875	0.00000000000000000000000000252435489670723777697510665368740555148570565506696697998046875
Food	Feed	0.00000000000000000000000001262177448353618888487553326843702775742852827533483489990234375	0.000000000000000000000000001262177448353618888487553326843702775742852827533483489990234375
Food	Hay	0.000000000000000000000000006310887241768094442437766634218513878714264137667417449951171875	0.0000000000000000000000000006310887241768094442437766634218513878714264137667417449951171875
Food	Straw	0.0000000000000000000000000031554436208840472212188833171092569373571320688337087249755859375	0.00000000000000000000000000031554436208840472212188833171092569373571320688337087249755859375
Food	Stalks	0.0000000000000000000000000015777218104420	

TABLE 11

Cost of Producing Cotton on Farm IV (80 Acres)
(Yield: 2.1 Bales per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	8.0	\$ 1.00	\$ 8.00
Irrigator	12.5	.80	10.00
General	1.3	.80	1.04
Total Labor			<u>19.04</u>
Contracted and Piece Work:			
Chopping	5.3	.75	3.98
Hoeing	3.8	.75	2.85
Picking, Hand a/			99.55
Dusting (2 times) b/			2.40
Defoliating c/			4.00
Ginning (\$12.79/bale)			26.86
Total Contracted and Piece Work			<u>135.64</u>
Motive Power:			
W-3	8.0	1.28	10.24
$\frac{1}{2}$ Ton Pick-up Truck (miles)	15.0	.08	1.20
Total Motive Power			<u>11.44</u>
Farm Equipment:			
2-Row Stalk Cutter	.4	.57	.23
7' Offset Disk Harrow	1.0	.42	.42
2-16" 2-Way Plow	1.0	.64	.64
4-Row Lister	.3	1.27	.38
12' Spike Harrow	.3	.32	.10
4-Row Lister Planter	.3	2.38	.71
10' Cultipacker	.3	2.01	.60
2-Row Cultivator	4.4	.09	.40
2-Row Fertilizer Attach.	.7	.30	.21
5-Bale Cotton Trailer	1.0	1.28	1.28
Total Equipment			<u>4.97</u>

Continued-

Table 11 continued

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed (lbs.)	30.0	\$.06	\$ 1.80
Water (Acre feet)	3.2	7.67	24.54
Fertilizer (lbs.) d/	325.0	.0266	8.65
Dust (lbs.) e/	60.0	.0545	3.27
Total Materials			<u>38.26</u>
Miscellaneous:			
Compensation Insurance f/			.21
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			<u>21.46</u>
Total Cost per Acre			<u>\$230.81</u>
Total Cost per Bale			<u>\$109.91</u>

a/ Picking rate calculated on basis of 300¹/₂ hand picked seed cotton per man per 9 hrs. picking, 1,400¹/₂ seed cotton per bale of lint. Usually contracted for on cwt. seed cotton basis, the charge being \$3.25/cwt. in 1949 and 1950. For a yield of 2.1 bales, man hr. requirements would approximate 88.2 man hrs. per acre.

b/ Application charge only. Usual charge was 4¢/lb., 60¹/₂ applied.

c/ Includes application and materials.

d/ 21% dry ammonium sulfate.

e/ 5% DDT, 50% Sulfur.

f/ \$1.10/\$100 payroll.

1914, 1915, 1916, 1917

TABLE 12

Cost of Producing Cotton on Farm V (320 Acres)
(Yield: 2.1 bales per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	7.4	\$ 1.00	\$ 7.40
Irrigator	10.1	.80	8.08
General	1.3	.80	1.04
Total Labor			<u>16.52</u>
Contracted and Piece Work:			
Chopping	5.3	.75	3.98
Hoeing	3.8	.75	2.85
Picking, Hand <u>a/</u>			95.55
Dusting (2 times) <u>b/</u>			2.40
Defoliating <u>c/</u>			4.00
Ginning (\$12.79/bale)			26.86
Total Contracted and Piece Work			<u>135.64</u>
Motive Power:			
W-2	3.9	.60	2.34
W-3	2.6	1.14	2.96
DT-3	.9	2.69	2.42
$\frac{1}{2}$ Ton Pick-up Truck (miles)	15.0	.06	.90
Total Motive Power			<u>8.62</u>
Farm Equipment:			
8' Chisel	.6	.27	.16
10' Cultipacker	.3	.55	.16
2-Row Cultivator (2)	4.4	.03	.13
2-Row Fertilizer Attach.	.7	.08	.06
4-Row Lister	.3	.54	.16
4-Row Lister Planter	.3	.88	.26
7' Offset Disk Harrow	.6	.26	.16
10' Offset Disk Harrow	.3	2.09	.63
12' Spike Harrow	.3	.11	.03
5-Bale Cotton Trailer	1.0	.16	.16
Total Equipment			<u>1.91</u>

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4	IV	The Ministry of the Church
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6	VI	The Church in the World

Table 12 continued

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed (lbs.)	30.0	\$.06	\$ 1.80
Water (Acre feet)	3.2	5.77	18.46
Fertilizer (lbs.) <u>d/</u>	325.0	.0266	8.65
Dust (lbs.) <u>e/</u>	60.0	.0545	3.27
Total Materials			<u>32.18</u>
Miscellaneous:			
Compensation Insurance <u>f/</u>			.18
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			<u>21.43</u>
 Total Cost per Acre			 <u>\$216.30</u>
Total Cost per Bale			<u>\$103.00</u>

a/ Picking rate calculated on basis of 300% hand picked seed cotton per man per 9 hrs. picking, 1,400% seed cotton per bale of lint. Usually contracted for on cwt. seed cotton basis, the charge being \$3.25/cwt. in 1949 and 1950. For a yield of 2.1 bales, man hr. requirements would approximate 88.2 man hrs. per acre.

b/ Application charge only. Usual charge was 4¢/lb., 60# applied.

c/ Includes application and materials.

d/ 21% dry ammonium sulfate.

e/ 5% DDT, 50% Sulfur.

f/ \$1.10/\$100 payroll.

season and calls for near full capacity pumping through a large part of the growing season. On Farm II the absence of alfalfa and increased acreage of cotton and potatoes reduces the total equipment investment and also makes for a nearer optimum use of this equipment. Thus it is seen that organizational changes can affect costs, although the main attention in the modifying of organization is usually focused on the resultant increases or decreases in total income. Comparing Farms III and IV which are organized differently but similar in size, a difference of \$2.22 in cost per acre is found. The double cropping on Farm IV permitted increased tractor and equipment use and more nearly optimum use of the pumping plant, because of the complementary relationship existing between milo and potatoes in the organization.

The fact that organizational and scale changes did not result in more significant per acre cost changes is partly explained by the cost-price assumptions used for this study and partly by the tendency of particular cost components to move counter to one another as farm organization and size change.

The adoption of other sets of factor prices typical of different years (where relative factor prices differ significantly) might yield very different results. For example, an increase in labor costs combined with the mechanization of some process previously requiring a considerable labor force might reduce costs of production for producers with planted acreage sufficient to utilize economically the machine. A large farm operator might have sufficient acreage to permit adoption of the machine and reduce his cost of production directly. A smaller operator might be able to shift his organization as a result of the change in budgeted net returns to include an acreage of the particular enterprise commensurate with economic utilization. The small operator may not be able to do either and must, therefore, continue with high cost labor or contract for the work. This illustrates the fact that scale and organization are both sources of saving in costs and in some instances are difficult to separate. An example of a machine replacing high cost labor in this study area is provided by the mechanical picking, loading, and bulk hauling of early potatoes.

Costs of Producing Potatoes.--The per acre variation in potato costs on the five farms shows similar effects of size and organization variation (Tables 13 through 17). On the 80 acre farm (Farm III) the cost was \$443.97

TABLE 13

Cost of Producing Potatoes on Farm I (160 Acres)
(field: 290 cwt. per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	4.9	\$ 1.00	\$ 4.90
Irrigator	8.6	.80	6.88
General	1.2	.80	.96
Total Labor			<u>12.74</u>
Contracted and Piece Work:			
Cutting Seed <u>a/</u>			4.50
Dusting <u>b/</u>			1.20
Rotobearing (<u>c</u> 3.00/acre)			3.00
Digging <u>c/</u>			10.00
Picking <u>d/</u>			40.60
Hauling (<u>e</u> \$.10/cwt.) <u>e/</u>			29.00
Shed Costs <u>f/</u>			145.00
Total Contracted and Piece Work			<u>255.30</u>
Motive Power:			
W-2	2.1	.71	1.49
DT-5	2.8	2.72	7.62
Total Motive Power			<u>9.11</u>
Farm Equipment:			
2-Row Lister	.5	.43	.22
7½' Offset Disk Harrow	1.0	.48	.48
8' Chisel	.6	.56	.34
8' Spike Harrow (2-4' sections)	.5	.13	.06
2-Row Potato Planter and Fertilizer Attachment	1.2	2.19	2.63
12' Spike Harrow (3-4' sections)	.3	.19	.06
2-Row Cultivator	1.0	.08	.08
6' Steel Roller	.3	1.61	.48
Total Equipment			<u>4.55</u>

Continued-

(Note: This is a copy of the original document and is not a legal document.)

Date	Description	Amount	Remarks
1917 Jan 1	To Balance	100.00	Initial deposit
Jan 15	By Cash	50.00	Cash payment
Jan 20	By Cash	25.00	Cash payment
Jan 25	By Cash	15.00	Cash payment
Jan 30	By Cash	10.00	Cash payment
Feb 5	By Cash	5.00	Cash payment
Feb 10	By Cash	5.00	Cash payment
Feb 15	By Cash	5.00	Cash payment
Feb 20	By Cash	5.00	Cash payment
Feb 25	By Cash	5.00	Cash payment
Feb 30	By Cash	5.00	Cash payment
Mar 5	By Cash	5.00	Cash payment
Mar 10	By Cash	5.00	Cash payment

Table 13 continued

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed, dipped (cwt)	18.0	\$ 5.00	\$ 90.00
Water (Acre feet)	2.6	6.74	17.52
Fertilizer (lbs) <u>g</u> /	825.0	.0266	21.95
Gypsum, refined (tons)	2.0	12.00	24.00
Dust (lbs) <u>h</u> /	30.0	.0545	1.64
Gypsum, commercial (lbs) <u>i</u> /	500.0	.006	3.00
Total Materials			158.11
Miscellaneous:			
Compensation Insurance <u>j</u> /			.14
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			21.39
Total Cost Per Acre			\$439.00
Total Cost Per Cwt.			\$ 1.51

a/ Usual piece work, the 1949-50 rate being \$.25/cwt. Average worker can cut 29 cwt/9 hrs.

b/ Application charge only. Potatoes dug after June 15 would receive a second dusting, adding \$2.84 per acre to the cost or about \$.01 per sack.

c/ Usually contracted, the 1949-50 rate being \$10.00/acre. Physical inputs approximate 1.5 tractor hrs. and machine hrs. and 3 man hrs.

d/ Usually contracted, the 1949-50 rate being \$.14/cwt. (\$.12 for the picker and \$.02 for the contractor). In 10 hrs. the average picker will pick 80 cwt., requiring 36 man hrs. to pick an acre if the yield is 290 cwt.

e/ Varies with distance hauled. \$2.00/ton represents an average hauling charge based on field survey data.

f/ Includes washing, grading, sacking, and loading for which the grower is charged \$.50/cwt.

g/ 21% dry Ammonium Sulfate.

h/ 5% DDT, 50% Sulfur.

i/ Applied in the water

j/ \$1.10/\$100 of payroll.

1. Lower to 2000 ft. 1/2

TABLE 14

Cost of Producing Potatoes on Farm II (160 Acres)
(Yield: 290 cwt. per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	4.9	\$ 1.00	\$ 4.90
Irrigator	8.6	.80	6.88
General	1.2	.80	.96
Total Labor			<u>12.74</u>
Contracted and Piece Work:			
Cutting Seed <u>a/</u>			4.50
Dusting <u>b/</u>			1.20
Rotobating (\$3.00/acre)			3.00
Digging <u>c/</u>			10.00
Picking <u>d/</u>			40.60
Hauling (\$.10/cwt.) <u>e/</u>			29.00
Shed Costs <u>f/</u>			145.00
Total Contracted and Piece Work			<u>233.30</u>
Motive Power:			
W-2	2.1	.72	1.51
DT-5	2.8	2.03	5.68
Total Motive Power			<u>7.19</u>
Farm Equipment:			
2-Row Lister	.5	.32	.16
7½' Offset Disk Harrow	1.0	.35	.35
8' Chisel	.6	.42	.25
8' Spike Harrow (2-4' sections)	.5	.10	.05
2-Row Potato Planter and Fertilizer Attachment	1.2	1.41	1.69
12' Spike Harrow (3-4' sections)	.3	.15	.04
2-Row Cultivator	1.0	.05	.05
6' Steel Roller	.3	1.07	.32
Total Equipment			<u>2.91</u>

Continued-

Cost of shipping materials on each 12 (250 cases)
(Total: \$20,000.00)

Date	Quantity	Unit Price	Total
1941	1000	20.00	20,000.00

Table 14 continued

Inputs	Units of Inputs per acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed, dipped (cwt)	18.0	\$ 5.00	\$ 90.00
Water (acre feet)	2.6	7.70	20.02
Fertilizer (lbs.) g/	825.0	.0266	21.95
Gypsum, refined (tons)	2.0	12.00	24.00
Dust (lbs.) h/	30.0	.0545	1.64
Gypsum, commercial (lbs.) i/	500.0	.006	3.00
Total Materials			160.61
Miscellaneous:			
Compensation Insurance j/			.14
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			21.39
Total Cost per Acre			438.14
Total Cost per Cwt.			1.51

a/ Usual piece work, the 1949-50 rate being \$.25/cwt. Average worker can cut 29 cwt/9 hrs.

b/ Application charge only. Potatoes dug after June 15 would receive a second dusting, adding \$2.84 per acre to the cost or about \$.01 per sack.

c/ Usually contracted, the 1949-50 rate being \$10.00/acre. Physical inputs approximate 1.5 tractor hrs. and machine hrs. and 3 man hrs.

d/ Usually contracted, the 1949-50 rate being \$.14/cwt. (\$.12 for the picker and \$.02 for the contractor). In 10 hrs. the average picker will pick 80 cwt., requiring 36 man hrs. to pick an acre if the yield is 290 cwt.

e/ Varies with distance hauled. \$2.00/ton represents an average hauling charge based on field survey data.

f/ Includes washing, grading, sacking, and loading for which the grower is charged \$.50/cwt.

g/ 21% dry Ammonium Sulfate.

h/ 5% DDT, 50% Sulfur.

i/ Applied in the water.

j/ 1.10/100 of payroll.

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It is applied in the water.

..Forward to OPI Vol. 1 1/2

TABLE 15

Cost of Producing Potatoes on Farm III (80 Acres)
(Yield: 290 cwt. per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	5.0	\$ 1.00	\$ 5.00
Irrigator	9.3	.80	7.44
General	1.1	.80	.88
Total Labor			<u>13.32</u>
Contracted and Piece Work:			
Cutting Seed <u>a/</u>			4.50
Dusting <u>b/</u>			1.20
Rotobearing (\$3.00/acre)			3.00
Digging <u>c/</u>			10.00
Picking <u>d/</u>			40.60
Hauling (\$.10/cwt) <u>e/</u>			29.00
Shed Costs <u>f/</u>			<u>145.00</u>
Total Contracted and Piece Work			<u>233.30</u>
Motive Power:			
W-3	5.0	1.39	<u>6.95</u>
Total Motive Power			<u>6.95</u>
Farm Equipment:			
4-Row Lister	.3	1.91	.57
7' Offset Disk Harrow	1.0	.65	.65
2-16" 2-Way Plow	1.0	.74	.74
8' Spike Harrow (2-4' sections)	.5	.24	.12
2-Row Potato Planter and Fertilizer Attachment	1.1	4.56	5.02
12' Spike Harrow (3-4' sections)	.3	.36	.11
2-Row Cultivator	1.0	.10	.10
6' Steel Roller	.3	3.12	.94
Total Equipment			<u>8.25</u>

Continued-

Table 15 continued

Inputs	Units of Inputs per acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed, dipped (cwt.)	18.0	\$ 5.00	\$ 90.00
Water (Acre feet)	2.6	7.83	20.16
Fertilizer (lbs.) g/	825.0	.0266	21.95
Gypsum, refined (tons)	2.0	12.00	24.00
Dust (lbs.) h/	30.0	.0545	1.64
Gypsum, commercial (lbs.) i/	500.0	.006	3.00
Total Materials			<u>160.75</u>
Miscellaneous:			
Compensation Insurance j/			.15
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			<u>21.40</u>
Total Cost per Acre			\$ 445.97
Total Cost per Cwt.			\$ 1.53

a/ Usual piece work, the 1949-50 rate being \$.25/cwt. Average worker can cut 29 cwt/9 hrs.

b/ Application charge only. Potatoes dug after June 15 would receive a second dusting, adding \$2.84 per acre to the cost or about \$.01 per sack.

c/ Usually contracted, the 1949-50 rate being \$10.00/acre. Physical inputs approximate 1.5 tractor hrs. and machine hrs. and 3 man hrs.

d/ Usually contracted, the 1949-50 rate being \$.14/cwt. (\$.12 for the picker and \$.02 for the contractor). In 10 hrs. the average picker will pick 80 cwt., requiring 36 man hrs. to pick an acre if the yield is 290 cwt.

e/ Varies with distance hauled. \$2.00/ton represents an average hauling charge based on field survey data.

f/ Includes washing, grading, sacking, and loading for which the grower is charged \$.50/cwt.

g/ 21% dry Ammonium Sulfate.

h/ 5% DDT, 50% Sulfur.

i/ Applied in the water .

j/ \$1.10/\$100 of payroll.

Item	Quantity	Unit Price	Total
1. Labor (1000 hrs.)	1000	1.00	1000.00
2. Fuel (1000 gal.)	1000	0.50	500.00
3. Oil (1000 gal.)	1000	0.75	750.00
4. Grease (1000 lb.)	1000	0.25	250.00
5. Tires (1000)	1000	1.50	1500.00
6. Repairs (1000)	1000	0.50	500.00
7. Insurance (1000)	1000	0.25	250.00
8. Miscellaneous (1000)	1000	0.25	250.00
Total			5000.00

1. Labor (1000 hrs.)
 2. Fuel (1000 gal.)
 3. Oil (1000 gal.)
 4. Grease (1000 lb.)
 5. Tires (1000)
 6. Repairs (1000)
 7. Insurance (1000)
 8. Miscellaneous (1000)

Total 5000.00

TABLE 16

Cost of Producing Potatoes on Farm IV (80 Acres)
(Yield: 290 cwt. per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	5.0	\$ 1.00	\$ 5.00
Irrigator	9.3	.80	7.44
General	1.1	.80	.88
Total Labor			<u>13.32</u>
Contracted and Piece Work:			
Cutting Seed <u>a/</u>			4.50
Dusting <u>b/</u>			1.20
Rotobearing (\$3.00/acre)			3.00
Digging <u>c/</u>			10.00
Picking <u>d/</u>			40.60
Hauling (\$.10/cwt) <u>e/</u>			29.00
Shed Costs <u>f/</u>			<u>145.00</u>
Total Contracted and Piece Work			<u>233.30</u>
Motive Power:			
W-3	5.0	1.28	6.40
Total Motive Power			<u>6.40</u>
Farm Equipment:			
4-Row Lister	.3	1.27	.38
7' Offset Disk Harrow	1.0	.42	.42
2-16" 2-way Plow	1.0	.64	.64
8' Spike Harrow (2-4' sections)	.5	.22	.11
2-Row Potato Planter and Fertilizer Attachment	1.1	3.00	3.30
12' Spike Harrow (3-4' sections)	.3	.32	.10
2-Row Cultivator	1.0	.09	.09
6' Steel Roller	.3	2.04	.61
Total Equipment			<u>5.65</u>

Continued-

TABLE II

Summary of results of tests on Form IV (80 Acres)
 (1955: 800 and 1000)

Year	Area of land (Acres)	Yield (lb/acre)	Remarks
1955	800	100	Controlled and tested work: 1. 1000 lb/acre 2. 1000 lb/acre 3. 1000 lb/acre 4. 1000 lb/acre 5. 1000 lb/acre 6. 1000 lb/acre 7. 1000 lb/acre 8. 1000 lb/acre 9. 1000 lb/acre 10. 1000 lb/acre 11. 1000 lb/acre 12. 1000 lb/acre 13. 1000 lb/acre 14. 1000 lb/acre 15. 1000 lb/acre 16. 1000 lb/acre 17. 1000 lb/acre 18. 1000 lb/acre 19. 1000 lb/acre 20. 1000 lb/acre 21. 1000 lb/acre 22. 1000 lb/acre 23. 1000 lb/acre 24. 1000 lb/acre 25. 1000 lb/acre 26. 1000 lb/acre 27. 1000 lb/acre 28. 1000 lb/acre 29. 1000 lb/acre 30. 1000 lb/acre 31. 1000 lb/acre 32. 1000 lb/acre 33. 1000 lb/acre 34. 1000 lb/acre 35. 1000 lb/acre 36. 1000 lb/acre 37. 1000 lb/acre 38. 1000 lb/acre 39. 1000 lb/acre 40. 1000 lb/acre 41. 1000 lb/acre 42. 1000 lb/acre 43. 1000 lb/acre 44. 1000 lb/acre 45. 1000 lb/acre 46. 1000 lb/acre 47. 1000 lb/acre 48. 1000 lb/acre 49. 1000 lb/acre 50. 1000 lb/acre 51. 1000 lb/acre 52. 1000 lb/acre 53. 1000 lb/acre 54. 1000 lb/acre 55. 1000 lb/acre 56. 1000 lb/acre 57. 1000 lb/acre 58. 1000 lb/acre 59. 1000 lb/acre 60. 1000 lb/acre 61. 1000 lb/acre 62. 1000 lb/acre 63. 1000 lb/acre 64. 1000 lb/acre 65. 1000 lb/acre 66. 1000 lb/acre 67. 1000 lb/acre 68. 1000 lb/acre 69. 1000 lb/acre 70. 1000 lb/acre 71. 1000 lb/acre 72. 1000 lb/acre 73. 1000 lb/acre 74. 1000 lb/acre 75. 1000 lb/acre 76. 1000 lb/acre 77. 1000 lb/acre 78. 1000 lb/acre 79. 1000 lb/acre 80. 1000 lb/acre 81. 1000 lb/acre 82. 1000 lb/acre 83. 1000 lb/acre 84. 1000 lb/acre 85. 1000 lb/acre 86. 1000 lb/acre 87. 1000 lb/acre 88. 1000 lb/acre 89. 1000 lb/acre 90. 1000 lb/acre 91. 1000 lb/acre 92. 1000 lb/acre 93. 1000 lb/acre 94. 1000 lb/acre 95. 1000 lb/acre 96. 1000 lb/acre 97. 1000 lb/acre 98. 1000 lb/acre 99. 1000 lb/acre 100. 1000 lb/acre

Table 16 continued

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed, dipped (cwt)	18.0	\$ 5.00	\$ 90.00
Water (Acre feet)	2.6	7.67	19.94
Fertilizer (lbs.) g/	825.0	.0266	21.95
Gypsum, refined (tons)	2.0	12.00	24.00
Dust. (lbs.) h/	30.0	.0545	1.64
Gypsum, commercial (lbs.) i/	500.0	.006	3.00
Total Materials			<u>160.53</u>
Miscellaneous:			
Compensation Insurance j/			.15
Taxes			6.25
Interest (5% of \$300)			<u>15.00</u>
Total Miscellaneous			<u>21.40</u>
Total Cost per Acre			<u>\$140.60</u>
Total Cost per Cwt.			\$ 1.52

a/ Usual piece work, the 1949-50 rate being \$.25/cwt. Average worker can cut 29 cwt/9 hrs.

b/ Application charge only. Potatoes dug after June 15 would receive a second dusting, adding \$2.84 per acre to the cost or about \$.01 per sack.

c/ Usually contracted, the 1949-50 rate being \$10.00/acre. Physical inputs approximate 1.5 tractor hrs. and machine hrs. and 3 man hrs.

d/ Usually contracted, the 1949-50 rate being \$.14/cwt. (\$.12 for the picker and \$.02 for the contractor). In 10 hrs. the average picker will pick 80 cwt., requiring 36 man hrs. to pick an acre if the yield is 290 cwt.

e/ Varies with distance hauled. \$2.00/ton represents an average hauling charge based on field survey data.

f/ Includes washing, grading, sacking, and loading for which the grower is charged \$.50/cwt.

g/ 21% dry Ammonium Sulfate.

h/ 5% DDT, 50% Sulfur.

i/ Applied in the water.

j/ \$1.10/\$100 of payroll.

TABLE 17

Cost of Producing Potatoes on Farm V (320 Acres)
(Yield: 290 cwt. per acre)

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Labor:			
Tractor Driver	4.7	\$ 1.00	\$ 4.70
Irrigator	8.6	.80	6.88
General	1.2	.80	.96
Total Labor			<u>12.54</u>
Contracted and Piece Work:			
Cutting Seed <u>a/</u>			4.50
Dusting <u>b/</u>			1.20
Rotobearing (\$3.00/acre)			3.00
Digging <u>c/</u>			10.00
Picking <u>d/</u>			40.60
Hauling (\$.10/cwt) <u>e/</u>			29.00
Shed Costs <u>f/</u>			<u>145.00</u>
Total Contracted and Piece Work			<u>235.30</u>
Motive Power:			
W-2	1.9	.60	1.14
W-3	2.2	1.14	2.51
DT-3	.6	2.69	<u>1.61</u>
Total Motive Power			<u>5.26</u>
Farm Equipment:			
8' Chisel	.6	.27	.16
2-Row Cultivator	1.0	.03	.03
4-Row Lister	.3	.54	.16
7' Offset Disk Harrow	1.0	.26	.26
2-Row Potato Planter and Fertilizer Attachment	1.2	1.54	1.85
12' Spike Harrow	.3	.11	.03
6' Steel Roller	.3	1.07	<u>.32</u>
Total Equipment			<u>2.81</u>

Continued-

TABLE IV

Cost of Production: Potatoes on Farm V (380 Acres)
(Listed in S.W. 1/4 sec. 36)

Item	1934	1935	1936
Seed Potatoes	100.00	100.00	100.00
Planting	100.00	100.00	100.00
Harvesting	100.00	100.00	100.00
Marketing	100.00	100.00	100.00
Transportation	100.00	100.00	100.00
Storage	100.00	100.00	100.00
Interest	100.00	100.00	100.00
Depreciation	100.00	100.00	100.00
Insurance	100.00	100.00	100.00
Other	100.00	100.00	100.00
Total	100.00	100.00	100.00

Table 17 continued

Inputs	Units of Inputs per Acre (hours)	Cost per Unit of Input	Total Cost
Materials:			
Seed, dipped (cwt)	18.0	\$ 5.00	\$ 90.00
Water (Acre feet)	2.6	5.77	15.00
Fertilizer (lbs.) g/	825.0	.0266	21.95
Gypsum, refined (tons)	2.0	12.00	24.00
Dust (lbs.) h/	30.0	.0545	1.64
Gypsum, commercial (lbs.) i/	500.0	.006	3.00
Total Materials			<u>155.59</u>
Miscellaneous:			
Compensation Insurance j/			.17
Taxes			6.25
Interest (5% of \$300)			15.00
Total Miscellaneous			<u>21.42</u>
Total Cost per Acre			<u>\$430.97</u>
Total Cost per Cwt.			\$ 1.49

a/ Usual piece work, the 1949-50 rate being \$.25/cwt. Average worker can cut 29 cwt/9 hrs.

b/ Application charge only. Potatoes dug after June 15 would receive a second dusting, adding \$2.84 per acre to the cost or about \$.01 per sack.

c/ Usually contracted, the 1949-50 rate being \$10.00/acre. Physical inputs approximate 1.5 tractor hrs. and machine hrs. and 3 man hrs.

d/ Usually contracted, the 1949-50 rate being \$.14/cwt. (\$.12 for the picker and \$.02 for the contractor). In 10 hrs. the average picker will pick 80 cwt., requiring 36 man hrs. to pick an acre if the yield is 290 cwt.

e/ Varies with distance hauled. \$2.00/ton represents an average hauling charge based on field survey data.

f/ Includes washing, grading, secking, and loading for which the grower is charged \$.50/cwt.

g/ 21% dry Ammonium Sulfate.

h/ 5% DDT, 50% Sulfur.

i/ Applied in the water.

j/ \$1.10/\$100 of payroll.

Inputs	Inputs per Acre (Pounds)	Cost per Unit of Input	Total Cost
Water (Acres Feet)	2.6	\$2.17	\$5.64
Fertilizer (lbs.)	25.0	18.00	\$450.00
Tractor, fuel, oil (hrs.)	2.0	3.00	\$6.00
Seed (lbs.)	2.0	3.00	\$6.00
Grain, commercial (lbs.)	1.0	3.00	\$3.00
Miscellaneous:			
Insurance			
Interest (1% of \$500)			
Total Miscellaneous			
Total Cost per Acre			\$460.64
Total Cost per Unit			\$1.15

1/ Usual place work, the 1950-51 rate being \$2.17/acre. Average water cost per

2/ Application of fertilizer only. Fertilizer cost \$18.00/acre. 1950-51 rate being \$2.17/acre. Average water cost per unit of output, being \$1.15 per acre or about \$1.15 per unit.

3/ Approximate 1.5 tractor hrs. and machine hrs. and 2 man hrs.

4/ Usually commercial, the 1950-51 rate being \$3.00/acre. (1950-51 rate being \$3.00/acre for the north coast). In 1950, the average water cost per unit of output, being \$1.15 per acre or about \$1.15 per unit.

5/ Various other charges included. \$2.00/acre represents an average of various charges based on field survey data.

6/ Includes seedling, planting, weeding, and harvesting for which the average is

1/ 50 lbs. per acre.

2/ Applied in the water.

3/ \$1.15/acre of fertilizer.

per acre and on the 320 acre farm (Farm V) it was only \$430.97. The relatively large yield reduces the per sack differences to a few cents. The reasons for these declines and the source of savings are the same as for the cotton enterprise; namely, motive power and water costs. Motive power costs declined from \$6.95 on the 80 acre farm to \$5.26 on the 320 acre farm. Water costs declined from \$20.16 to \$15.00.

Effects of enterprise organization are not clear in these data largely because of counter shifts in cost elements. The cost per acre for potato production on Farm I is \$439.00 and on Farm II it is \$438.14. Again an advantage in motive power and equipment usage is nearly offset by the increased water cost which Farm II experienced because of the lack of alfalfa in the organization. Comparing Farms III and IV, both of 80 acres but with Farm IV double cropping milo behind potatoes, potato production costs on a per acre basis showed a difference of \$3.37 with Farm IV enjoying the reduced cost. Better equipment and pumping plant utilization because of existing enterprise complementarity explains this difference. The statements with reference to choice of cost-price data in the assumptions underlying this analysis and the possible results to be obtained if other sets of data had been used are equally applicable in this section.

Cost differentials based on resource utilization which in turn reflects variation in organization do not in themselves provide a basis for farm reorganization. Any plan for reorganizing a farm must also consider the gross farm income changes which will accompany the reorganization. The object of reorganization is to increase net farm income, net farm income reflecting both gross income and cost changes arising from the alteration.

One further comment on these comparisons is necessary. The cost data shown indicate that scale economies exist on cotton-potato farms (Tables 8 through 17). But these calculations have included charges for only those amounts of resources necessary to produce the crops. Additional expenses accrue to the farm business when the productive resources at the disposal of the farm operator are not fully employed. The operator's own labor and that of his family are probably the best example of unemployed resources, particularly on smaller farms.

Therefore, the strict budget technique employed in this section understates the actual cost differences occurring between the 80 acre and 320 acre farm.^{15/}

Conclusions

The physical and biological limitations to agricultural production, the physical input-output data, cost and price assumptions, and cost of production calculations have been presented in this report for the primary purpose of assisting farm operators in making organization and management decisions. Other agencies interested in agricultural production in this area should also find this information helpful.

The physical information should be of value in selecting enterprises and combining them into an organization, in determining tractor power and equipment needs, in selecting adequate irrigating facilities, and in planning the farm work program to make most efficient use of the various resources at the disposal of the farm operator. Cost data, as developed in the final sections of this report are of value in making current organization decisions but the method employed in the computations is probably of greater value in providing the individual operator with a method for making calculations reflecting his individual conditions.

This report has presented a large quantity of background information on farming in this area. Subsequent reports will treat in greater detail the problems of scale of operations and the relation to costs and returns, and the more specific problem of production adjustments to changing costs and prices, acreage and marketing controls, and changing technology. These reports will illustrate specific adjustments in organization which can be made to maximize net farm incomes when economic and institutional forces affecting agricultural production in this area change.

^{15/} The second report in this series is devoted to an analysis of scale economies on cotton-potato farms in this area.

the system, the most important factor, no doubt, is the
relationship between the individual and the system
and the system itself.

The individual and the system are related in a
certain way, and this relationship is the basis of
the system's operation. The individual is the
subject of the system, and the system is the
object of the individual's action.

The individual's action is the cause of the
system's operation, and the system's operation
is the effect of the individual's action. The
individual's action is the cause of the system's
operation, and the system's operation is the
effect of the individual's action.

The individual's action is the cause of the
system's operation, and the system's operation
is the effect of the individual's action.

The individual's action is the cause of the
system's operation, and the system's operation
is the effect of the individual's action.

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system's operation, and the system's operation
is the effect of the individual's action.

The individual's action is the cause of the
system's operation, and the system's operation
is the effect of the individual's action.

APPENDIX TABLE 1

Physical Resources Available to the Operator of Farm I,
a 160 Acre Farm Cultivating 80 Acres of Cotton,
30 Acres of Potatoes, and 40 Acres of Alfalfa

Physical Resources	Investment Per Unit	Total Investment
Land, 160 Acres	\$ 300.	\$ 48,000.
Buildings		
Dwelling	4,500.	
Tractor Shed	750.	
Shop-Storage Shed (Equipped) <u>a/</u>	1,565.	6,815.
Irrigation System		
900 G.P.M. Well and pump	7,015.	
700 G.P.M. Well and pump	4,600.	
Underground concrete system	7,122.	18,737.
Motive Power		
W-2 Tractor	1,485.	
DT-3 Tractor	2,990.	4,475.

Continued-

1. The value of the property at the time of the death of the decedent.	1000	1000
2. The value of the property at the time of the death of the decedent.	1000	1000
3. The value of the property at the time of the death of the decedent.	1000	1000
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8. The value of the property at the time of the death of the decedent.	1000	1000
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Appendix Table 1 continued.

Physical Resources	Investment Per Unit	Total Investment
Farm Equipment		
8'-Chisel	\$ 305.	
10'-Cultipacker	210.	
2-Row Cultivator	180.	
2-Row Fertilizer Attachment	75.	
2-Row Lister	170.	
4-Row Lister Planter	405.	
7 1/2'-Offset Disk Harrow	385.	
2-Row Potato Planter and Fertilizer Attachment	570.	
7'-Power Mower	180.	
8'-Side Delivery Rake	315.	
12'-Spike Harrow	60.	
2-Row Stalk Cutter	95.	
6'-Steel Roller	115.	
		\$ 3,065.
		\$ 81,092.
Labor Force		
Operator b/ 1 man, full time for 8 1/2 months		

a/ A farm shop equipped with sufficient small tools to make adjustments and minor repairs on equipment, a drill press, and small arc welding outfit.

b/ Available full time at field work until May 10, half-time until cotton harvest completed, then full time for month of December.

APPENDIX TABLE 2

Physical Resources Available to the Operator of Farm II,
a 160 Acre Farm Cultivating 100 Acres of Cotton
and 50 Acres of Potatoes

Physical Resources	Investment Per Unit	Total Investment
Land, 160 Acres	\$ 300.	\$ 48,000.
Buildings		
Dwelling	4,500.	
Tractor Shed	750.	
Shop-Storage Shed (Equipped) <u>a/</u>	1,565.	6,815.
Irrigation System		
900 G.P.M. Well and pump	7,015.	
700 G.P.M. Well and pump	4,600.	
Underground concrete system	7,122.	18,737.
Motive Power		
W-2 Tractor	1,485.	
DT-3 Tractor	2,990.	4,475.

Continued-

Appendix Table 2 continued.

Physical Resources	Investment Per Unit	Total Investment
Farm Equipment		
8'-Chisel	\$ 305.	
10'-Cultipacker	210.	
2-Row Cultivator	180.	
2-Row Fertilizer Attachment	75.	
2-Row Lister	170.	
4-Row Lister Planter	405.	
7 1/2'-Offset Disk Harrow	385.	
2-Row Potato Planter and Fertilizer Attachment	570.	
12'-Spike Harrow	60.	
2-Row Stalk Cutter	95.	
6' Steel Roller	115.	
		\$ 2,570.
		\$ 80,597.
Labor Force		
Operator b/ 1 man, full time for 6 months.		

a/ A farm shop equipped with sufficient small tools to make adjustments and minor repairs on equipment, a drill press, and small arc welding outfit.

b/ Available full time for field work until October 10, then half-time until December 7, then full time.

1. *Prunella vulgaris* L.
 2. *Prunella vulgaris* L.
 3. *Prunella vulgaris* L.
 4. *Prunella vulgaris* L.
 5. *Prunella vulgaris* L.
 6. *Prunella vulgaris* L.
 7. *Prunella vulgaris* L.
 8. *Prunella vulgaris* L.
 9. *Prunella vulgaris* L.
 10. *Prunella vulgaris* L.

1. <i>Prunella vulgaris</i> L. 2. <i>Prunella vulgaris</i> L. 3. <i>Prunella vulgaris</i> L. 4. <i>Prunella vulgaris</i> L. 5. <i>Prunella vulgaris</i> L. 6. <i>Prunella vulgaris</i> L. 7. <i>Prunella vulgaris</i> L. 8. <i>Prunella vulgaris</i> L. 9. <i>Prunella vulgaris</i> L. 10. <i>Prunella vulgaris</i> L.	1. <i>Prunella vulgaris</i> L. 2. <i>Prunella vulgaris</i> L. 3. <i>Prunella vulgaris</i> L. 4. <i>Prunella vulgaris</i> L. 5. <i>Prunella vulgaris</i> L. 6. <i>Prunella vulgaris</i> L. 7. <i>Prunella vulgaris</i> L. 8. <i>Prunella vulgaris</i> L. 9. <i>Prunella vulgaris</i> L. 10. <i>Prunella vulgaris</i> L.	1. <i>Prunella vulgaris</i> L. 2. <i>Prunella vulgaris</i> L. 3. <i>Prunella vulgaris</i> L. 4. <i>Prunella vulgaris</i> L. 5. <i>Prunella vulgaris</i> L. 6. <i>Prunella vulgaris</i> L. 7. <i>Prunella vulgaris</i> L. 8. <i>Prunella vulgaris</i> L. 9. <i>Prunella vulgaris</i> L. 10. <i>Prunella vulgaris</i> L.
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1. *Prunella vulgaris* L.
 2. *Prunella vulgaris* L.

APPENDIX TABLE 3

Physical Resources Available to the Operator of Farm III,
 an 80 Acre Farm Cultivating 50 Acres of Cotton,
 15 Acres of Potatoes, and 10 Acres of Alfalfa

Physical Resources	Investment Per Unit	Total Investment
Land, 80 Acres	\$ 300.	\$ 24,000.
Buildings		
Dwellings	4,500.	
Tractor Shed	400.	
Shop-Storage Shed <u>a/</u>	915.	5,815.
Irrigation System		
900 G.P.M. Well and pump	7,015.	
Underground concrete system	3,489.	10,504.
Motive Power		
W-3 Tractor	2,490.	2,490.

Continued-

1. 1900	1900	1900
2. 1901	1901	1901
3. 1902	1902	1902
4. 1903	1903	1903
5. 1904	1904	1904
6. 1905	1905	1905
7. 1906	1906	1906
8. 1907	1907	1907
9. 1908	1908	1908
10. 1909	1909	1909
11. 1910	1910	1910
12. 1911	1911	1911
13. 1912	1912	1912
14. 1913	1913	1913
15. 1914	1914	1914
16. 1915	1915	1915
17. 1916	1916	1916
18. 1917	1917	1917
19. 1918	1918	1918
20. 1919	1919	1919
21. 1920	1920	1920
22. 1921	1921	1921
23. 1922	1922	1922
24. 1923	1923	1923
25. 1924	1924	1924
26. 1925	1925	1925
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29. 1928	1928	1928
30. 1929	1929	1929
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100. 1999	1999	1999

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 96. 1995
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 99. 1998
 100. 1999

Appendix Table 3 continued

Physical Resources	Investment Per Unit	Total Investment
Farm Equipment		
10'-Cultipacker	\$ 210.	
2-Row Cultivator	180.	
2-Row Fertilizer Attachment	75.	
4-Row Lister	315.	
4-Row Lister Planter	405.	
7'-Offset Disk Harrow	341.	
2-Row Potato Planter and Fertilizer Attachment	570.	
2-16" (2-way) Plow	325.	
7'-Power Mower	180.	
8'-Side Delivery Rake	315.	
12'-Spike Harrow	60.	
2-Row Stalk Cutter	95.	
6' Steel Roller	115.	
		\$ 3,186.
		\$ 45,995.
Labor Force		
Operator Full Time		
Regular Hired Labor at Planting Times <u>b/</u>		

a/ Shop consists of bench and small tools needed for adjustment and minor repair of machinery. No welding equipment or power tools included.

b/ For a total time of 7.2 days.

1. The first part of the report is a general description of the project and its objectives. This section should be written in a clear and concise manner, using simple language that is easy to understand. It should also include a brief history of the project and a statement of the project's purpose.

<p> The second part of the report is a detailed description of the project's progress. This section should be written in a clear and concise manner, using simple language that is easy to understand. It should also include a brief history of the project and a statement of the project's purpose. </p>	<p> The third part of the report is a detailed description of the project's progress. This section should be written in a clear and concise manner, using simple language that is easy to understand. It should also include a brief history of the project and a statement of the project's purpose. </p>	<p> The fourth part of the report is a detailed description of the project's progress. This section should be written in a clear and concise manner, using simple language that is easy to understand. It should also include a brief history of the project and a statement of the project's purpose. </p>
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The fifth part of the report is a detailed description of the project's progress. This section should be written in a clear and concise manner, using simple language that is easy to understand. It should also include a brief history of the project and a statement of the project's purpose.

APPENDIX TABLE 4

Physical Resources Available to the Operator of Farm IV, an
 80 Acre Farm Cultivating 50 Acres of Cotton, 25 Acres
 of Potatoes, and 20 Acres of Milo Double-Cropped
 After Potatoes

Physical Resources	Investment Per Unit	Total Investment
Land, 80 Acres	\$ 300.	\$ 24,000.
Buildings		
Dwelling	4,500.	
Tractor Shed	400.	
Shop-Storage Shed <u>a/</u>	915.	5,815.
Irrigation System		
900 G.P.M. Well and pump	7,015.	
Underground concrete system	3,489.	10,504.
Motive Power		
W-3 Tractor	2,490.	2,490.

Continued-

Appendix Table 4 continued

Physical Resources	Investment Per Unit	Total Investment
Farm Equipment		
10'-Cultipacker	\$ 210.	
2-Row Cultivator	180.	
2-Row Fertilizer Attachment	75.	
4-Row Lister	315.	
4-Row Lister Planter	405.	
7'-Offset Disk Harrow	341.	
2-Row Potato Planter and Fertilizer Attachment	570.	
2-16" (2-way) Plow	325.	
12'-Spike Harrow	60.	
2-Row Stalk Cutter	95.	
6' Steel Roller	115.	
		\$ 2,691.
		\$ 45,500.
Labor Force		
Operator Full Time		
Regular Hired Labor at Planting Time <u>b/</u>		

a/ Shop consists of bench and small tools needed for adjustment and minor repair of machinery. No welding equipment or power tools included.

b/ For a total time of 4.9 days.

APPENDIX TABLE 5

Physical Resources Available to the Operator of Farm V a 320
Acre Farm Cultivating 200 Acres of Cotton, 50 Acres
of Potatoes, and 50 Acres of Alfalfa

Physical Resources	Investment Per Unit	Total Investment
Land, 320 Acres	\$ 300.	\$ 96,000.
Buildings		
Dwelling	6,000.	
Tractor Shed	1,100.	
Shop-Storage Shed (Equipped) <u>a/</u>	2,050.	9,150.
Irrigation System		
3-700 G.P.M. Wells and pumps	13,800.	
1-900 G.P.M. Well and pump	7,015.	
Underground concrete system <u>b/</u>	14,244.	35,059.
Motive Power		
W-2 Tractor	1,485.	
W-3 Tractor	2,490.	
DT-3 Tractor	2,990.	6,965.

Continued-

Appendix Table 5 continued

Physical Resources	Investment Per Unit	Total Investment
Farm Equipment		
8'-Chisel	\$ 305.	
10'-Cultipacker	210.	
2- 2-Row Cultivators	360.	
2- 2-Row Fertilizer Attachments	150.	
4-Row Lister	315.	
4-Row Lister Planter	405.	
7'-Offset Disk Harrow	341.	
10'-Offset Disk Harrow	525.	
7'-Power Mower	180.	
2-Row Potato Planter and Fertilizer Attachment	570.	
8'-Side Delivery Rake	315.	
12'-Spike Harrow	60.	
2-Row Stalk Cutter	95.	
6' Steel Roller	115.	
		\$ 3,946.
		\$ 151,120.
Labor Force		
Operator c/ 1 man full time		
1 man part time d/		
1 irrigator e/		

- a/ A farm shop equipped with an extensive set of small tools, some power driven equipment such as a drill press, an arc welding outfit and other tools required to make adjustments and repairs on equipment, limiting shop jobs to heavy welding and major overhaul.
- b/ This system is twice that required on a farm of 160 acres. With less pumps and larger ones it might be possible to reduce this system but for the typical farm of this size, a system similar to this is comparable.
- c/ Operator can work full time to March 1, half-time to May 10, then only as used in irrigating until time to start hauling cotton to the gin at which time he can be used for this task. On completing cotton harvest he is again available full time.
- d/ For a total time of 185.4 days during the period from January through the 1st week in September.
- e/ For a total time of 76.5 hours during the period from May 10 to September 10.

APPENDIX TABLE 6

Standard of Inputs and Outputs and Calendar of Operations for Cotton
(Per Acre Inputs Based on a Yield of 2.1 Bales and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Dec.15-Jan.15	Cutting stalks	1	W-2		2-row stalk cutter	18.4	.5	.5
Dec.20-Jan.20	Disking (2 times)	1	DT-3		7 1/2' offset disk	18.5	1.0	1.0
Jan.10-Feb.10	Chiseling	1	DT-3		8' chisel	15.0	.6	.6
Feb.15-Mar.15	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
Feb.20-Mar.20	Preirrigating (6 acre-in.)						1.9	
Mar.1-Apr.1	Harrowing down beds	1	W-2		12' spike harrow	28.1	.3	.3
Apr.1-Apr.15	Planting (30 lbs.delinted seed)	2	W-2		4-row lister planter	26.4	.6	.3
Apr.5-Apr.20	Cultipacking	1	W-2		10' cultipacker	33.1	.3	.3
Apr.25-May 5	Cultivating (1st)	1	W-2		2-row cultivator	13.5	.7	.7
May 1-May 20	Chopping				Contract		5.3	
May 5-May 20	Cultivating (2nd)	1	W-2		2-row cultivator	14.3	.6	.6
May 20-June 5	Cultivating (3rd) and fertilizing	1	W-2		2-row cultivator and fertilizer attachment	13.0	.7	.7
May 20-June 10	Irrigating,1st (4 acre-in.)						1.1	
May 25-June 15	Hoeing				Contract		3.8	
May 25-June 15	Cultivating (4th)	1	W-2		2-row cultivator	16.3	.6	.6
June 15-June 30	Irrigating,2nd (4 acre-in.)						1.1	
June 20-July 5	Cultivating (5th)	1	W-2		2-row cultivator	16.3	.6	.6
July 1-July 10	Irrigating,3rd (4 acre-in.)						1.0	
July 1-July 15	Dusting (60 lbs.-5% DDT-50% sulfur)				Contract			
July 5-July 15	Cultivating (6th)	1	W-2		2-row cultivator	16.3	.6	.6
July 15-July 25	Irrigating,4th (4 acre-in.)						.8	
July 25-Aug.5	Irrigating,5th (4 acre-in.)						.7	
July 30-Aug.5	Cultivating (7th)	1	W-2		2-row cultivator	16.3	.6	.6
Aug.1 to Sept.10	Irrigating,continuous (12.4 acre-in.)						3.5	
Sept.1-Sept.25	Defoliating				Contract			
Sept.15-on	First picking, hand				Contract			
Nov.15-on	Second picking, hand (88.2 man hours)				Contract			
Sept.15-on	Hauling to gin				Pickup and 5-bale cotton trailer		1.0	
TOTALS	Ginning				Contract		27.4 ^{a/}	7.9

^{a/} Plus 88.2 man-hours picking labor.

APPENDIX TABLE 7

Standard of Inputs and Outputs and Calendar of Operations for Potatoes
(Per Acre Inputs Based on a Yield of 290 Cwt. and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Dec.20-Jan.20	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
Dec.20-Jan.20	Preirrigating (5.1 acre-in.)						1.8	
Jan.1-Jan.30	Disking	1	DT-3		7 1/2' offset disk	18.5	.5	.5
Jan.5-Jan.25	Chiseling	1	DT-3		8' chisel	15.0	.6	.6
Jan.5-Feb.10	Disking and harrowing	1	DT-3		7 1/2' offset disk, 8' spike harrow	18.5	.5	.5
Jan.5-Feb.15	Planting and fertilizing (18 cwt. dipped seed 825 lbs. 21% ammonium sulfate)	2	DT-3		2-row planter and fertilizer attachment	7.3	2.4	1.2
Feb.1-Mar.1	Harrowing down beds	1	W-2		12' spike harrow	28.1	.3	.3
Feb.15-Mar.15	Cultivating and furrowing out	1	W-2		2-row cultivator	17.6	.5	.5
Feb.20-Mar.20	Irrigating (4.3 acre-in.)						1.2	
Mar.10-Mar.30	Cultivating and furrowing out	1	W-2		2-row cultivator	18.7	.5	.5
Mar.20-June 1	Irrigating, continuous (20.6 acre-in.)						5.6	
May 5-June 5	Dusting				Contract			
May 15-June 10	Rolling	1	W-2		6' roller	30.5	.3	.3
May 15-June 10	Rotobearing (topping vines)				Contract			
May 20-June 20	Digging				Contract			
May 20-June 20	Picking (36 man hours)				Contract			
May 20-June 20	Hauling				Contract			
TOTALS							14.7a/	4.9

a/ Plus 5.6 man-hours for cutting seed and 36 man-hours picking labor.

1. The first part of the report is a general statement of the work done during the year.

General Statement of Work		Detailed Statement of Work		Summary of Results	
Item	Amount	Item	Amount	Item	Amount
Salaries	100.00	Salaries	100.00	Salaries	100.00
Travel	50.00	Travel	50.00	Travel	50.00
Materials	25.00	Materials	25.00	Materials	25.00
Supplies	10.00	Supplies	10.00	Supplies	10.00
Postage	5.00	Postage	5.00	Postage	5.00
Telephone	3.00	Telephone	3.00	Telephone	3.00
Lighting	2.00	Lighting	2.00	Lighting	2.00
Repairs	1.00	Repairs	1.00	Repairs	1.00
Insurance	0.50	Insurance	0.50	Insurance	0.50
Other	0.50	Other	0.50	Other	0.50
Total	196.50	Total	196.50	Total	196.50

The total amount of the report is \$196.50.

The report is a general statement of the work done during the year.

Report made by

APPENDIX TABLE 8

Standard of Inputs and Outputs and Calendar of Operations for Alfalfa
(Per Acre Inputs Based on a Yield of 8.5 Tons and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Mar.5-Mar.25	Irrigating (4.2 acre-in.)						.74	
Apr.5-Apr.15	First cutting	1	W-2		7' power mower	26.7	.34	.34
Apr.6-Apr.16	Raking	1	W-2		8' side delivery rake	28.3	.32	.32
Apr.10-Apr.20	Baling				Contract			
Apr.10-Apr.20	Roadsiding				Contract			
Apr.12-May 5	Irrigating (2 times) (7.4 acre-in.)						.62	
May 5-May 15	Second cutting	1	W-2		7' power mower	26.7	.34	.34
May 6-May 16	Raking	1	W-2		8' side delivery rake	28.3	.32	.32
May 10-May 20	Baling				Contract			
May 10-May 20	Roadsiding				Contract			
May 12-June 5	Irrigating (2 times) (7.4 acre-in.)						.62	
June 5-June 15	Third cutting	1	W-2		7' power mower	26.7	.34	.34
June 6-June 16	Raking	1	W-2		8' side delivery rake	28.3	.32	.32
June 10-June 20	Baling				Contract			
June 10-June 20	Roadsiding				Contract			
June 12-July 5	Irrigating (3 times) (11.1 acre-in.)						.93	
July 5-July 15	Fourth cutting	1	W-2		7' power mower	26.7	.34	.34
July 6-July 16	Raking	1	W-2		8' side delivery rake	28.3	.32	.32
July 10-July 20	Baling				Contract			
July 10-July 20	Roadsiding				Contract			
July 12-Aug.5	Irrigating (3 times) (11.1 acre-in.)						.93	
Aug.5-Aug.15	Fifth cutting	1	W-2		7' power mower	26.7	.34	.34
Aug.6-Aug.16	Raking	1	W-2		8' side delivery rake	28.3	.32	.32
Aug.10-Aug.20	Baling				Contract			
Aug.10-Aug.20	Roadsiding				Contract			
Aug.12-Sept.5	Irrigating (3 times) (11.1 acre-in.)						.93	

Continued-

Date	Description	Amount	Particulars	Balance	Total
1941-12-31	Balance forward	100.00		100.00	100.00
1942-01-01	Received from [illegible]	50.00		150.00	150.00
1942-01-15	Received from [illegible]	25.00		175.00	175.00
1942-02-01	Received from [illegible]	75.00		250.00	250.00
1942-02-15	Received from [illegible]	100.00		350.00	350.00
1942-03-01	Received from [illegible]	150.00		500.00	500.00
1942-03-15	Received from [illegible]	200.00		700.00	700.00
1942-04-01	Received from [illegible]	250.00		950.00	950.00
1942-04-15	Received from [illegible]	300.00		1250.00	1250.00
1942-05-01	Received from [illegible]	350.00		1600.00	1600.00
1942-05-15	Received from [illegible]	400.00		2000.00	2000.00
1942-06-01	Received from [illegible]	450.00		2450.00	2450.00
1942-06-15	Received from [illegible]	500.00		2950.00	2950.00
1942-07-01	Received from [illegible]	550.00		3500.00	3500.00
1942-07-15	Received from [illegible]	600.00		4100.00	4100.00
1942-08-01	Received from [illegible]	650.00		4750.00	4750.00
1942-08-15	Received from [illegible]	700.00		5450.00	5450.00
1942-09-01	Received from [illegible]	750.00		6200.00	6200.00
1942-09-15	Received from [illegible]	800.00		7000.00	7000.00
1942-10-01	Received from [illegible]	850.00		7850.00	7850.00
1942-10-15	Received from [illegible]	900.00		8750.00	8750.00
1942-11-01	Received from [illegible]	950.00		9700.00	9700.00
1942-11-15	Received from [illegible]	1000.00		10700.00	10700.00
1942-12-01	Received from [illegible]	1050.00		11750.00	11750.00
1942-12-15	Received from [illegible]	1100.00		12850.00	12850.00
1943-01-01	Received from [illegible]	1150.00		14000.00	14000.00
1943-01-15	Received from [illegible]	1200.00		15200.00	15200.00
1943-02-01	Received from [illegible]	1250.00		16450.00	16450.00
1943-02-15	Received from [illegible]	1300.00		17750.00	17750.00
1943-03-01	Received from [illegible]	1350.00		19100.00	19100.00
1943-03-15	Received from [illegible]	1400.00		20500.00	20500.00
1943-04-01	Received from [illegible]	1450.00		21950.00	21950.00
1943-04-15	Received from [illegible]	1500.00		23450.00	23450.00
1943-05-01	Received from [illegible]	1550.00		25000.00	25000.00
1943-05-15	Received from [illegible]	1600.00		26600.00	26600.00
1943-06-01	Received from [illegible]	1650.00		28250.00	28250.00
1943-06-15	Received from [illegible]	1700.00		29950.00	29950.00
1943-07-01	Received from [illegible]	1750.00		31700.00	31700.00
1943-07-15	Received from [illegible]	1800.00		33500.00	33500.00
1943-08-01	Received from [illegible]	1850.00		35350.00	35350.00
1943-08-15	Received from [illegible]	1900.00		37250.00	37250.00
1943-09-01	Received from [illegible]	1950.00		39200.00	39200.00
1943-09-15	Received from [illegible]	2000.00		41200.00	41200.00
1943-10-01	Received from [illegible]	2050.00		43250.00	43250.00
1943-10-15	Received from [illegible]	2100.00		45350.00	45350.00
1943-11-01	Received from [illegible]	2150.00		47500.00	47500.00
1943-11-15	Received from [illegible]	2200.00		49700.00	49700.00
1943-12-01	Received from [illegible]	2250.00		51950.00	51950.00
1943-12-15	Received from [illegible]	2300.00		54250.00	54250.00
1944-01-01	Received from [illegible]	2350.00		56600.00	56600.00
1944-01-15	Received from [illegible]	2400.00		59000.00	59000.00
1944-02-01	Received from [illegible]	2450.00		61450.00	61450.00
1944-02-15	Received from [illegible]	2500.00		63950.00	63950.00
1944-03-01	Received from [illegible]	2550.00		66500.00	66500.00
1944-03-15	Received from [illegible]	2600.00		69100.00	69100.00
1944-04-01	Received from [illegible]	2650.00		71750.00	71750.00
1944-04-15	Received from [illegible]	2700.00		74450.00	74450.00
1944-05-01	Received from [illegible]	2750.00		77200.00	77200.00
1944-05-15	Received from [illegible]	2800.00		80000.00	80000.00
1944-06-01	Received from [illegible]	2850.00		82850.00	82850.00
1944-06-15	Received from [illegible]	2900.00		85750.00	85750.00
1944-07-01	Received from [illegible]	2950.00		88700.00	88700.00
1944-07-15	Received from [illegible]	3000.00		91700.00	91700.00
1944-08-01	Received from [illegible]	3050.00		94750.00	94750.00
1944-08-15	Received from [illegible]	3100.00		97850.00	97850.00
1944-09-01	Received from [illegible]	3150.00		101000.00	101000.00
1944-09-15	Received from [illegible]	3200.00		104200.00	104200.00
1944-10-01	Received from [illegible]	3250.00		107450.00	107450.00
1944-10-15	Received from [illegible]	3300.00		110750.00	110750.00
1944-11-01	Received from [illegible]	3350.00		114100.00	114100.00
1944-11-15	Received from [illegible]	3400.00		117500.00	117500.00
1944-12-01	Received from [illegible]	3450.00		120950.00	120950.00
1944-12-15	Received from [illegible]	3500.00		124450.00	124450.00
1945-01-01	Received from [illegible]	3550.00		128000.00	128000.00
1945-01-15	Received from [illegible]	3600.00		131600.00	131600.00
1945-02-01	Received from [illegible]	3650.00		135250.00	135250.00
1945-02-15	Received from [illegible]	3700.00		138950.00	138950.00
1945-03-01	Received from [illegible]	3750.00		142700.00	142700.00
1945-03-15	Received from [illegible]	3800.00		146500.00	146500.00
1945-04-01	Received from [illegible]	3850.00		150350.00	150350.00
1945-04-15	Received from [illegible]	3900.00		154250.00	154250.00
1945-05-01	Received from [illegible]	3950.00		158200.00	158200.00
1945-05-15	Received from [illegible]	4000.00		162200.00	162200.00
1945-06-01	Received from [illegible]	4050.00		166250.00	166250.00
1945-06-15	Received from [illegible]	4100.00		170350.00	170350.00
1945-07-01	Received from [illegible]	4150.00		174500.00	174500.00
1945-07-15	Received from [illegible]	4200.00		178700.00	178700.00
1945-08-01	Received from [illegible]	4250.00		182950.00	182950.00
1945-08-15	Received from [illegible]	4300.00		187250.00	187250.00
1945-09-01	Received from [illegible]	4350.00		191600.00	191600.00
1945-09-15	Received from [illegible]	4400.00		196000.00	196000.00
1945-10-01	Received from [illegible]	4450.00		200450.00	200450.00
1945-10-15	Received from [illegible]	4500.00		204950.00	204950.00
1945-11-01	Received from [illegible]	4550.00		209500.00	209500.00
1945-11-15	Received from [illegible]	4600.00		214100.00	214100.00
1945-12-01	Received from [illegible]	4650.00		218750.00	218750.00
1945-12-15	Received from [illegible]	4700.00		223450.00	223450.00
1946-01-01	Received from [illegible]	4750.00		228200.00	228200.00
1946-01-15	Received from [illegible]	4800.00		233000.00	233000.00
1946-02-01	Received from [illegible]	4850.00		237850.00	237850.00
1946-02-15	Received from [illegible]	4900.00		242750.00	242750.00
1946-03-01	Received from [illegible]	4950.00		247700.00	247700.00
1946-03-15	Received from [illegible]	5000.00		252700.00	252700.00
1946-04-01	Received from [illegible]	5050.00		257750.00	257750.00
1946-04-15	Received from [illegible]	5100.00		262850.00	262850.00
1946-05-01	Received from [illegible]	5150.00		268000.00	268000.00
1946-05-15	Received from [illegible]	5200.00		273200.00	273200.00
1946-06-01	Received from [illegible]	5250.00		278450.00	278450.00
1946-06-15	Received from [illegible]	5300.00		283750.00	283750.00
1946-07-01	Received from [illegible]	5350.00		289100.00	289100.00
1946-07-15	Received from [illegible]	5400.00		294500.00	294500.00
1946-08-01	Received from [illegible]	5450.00		300000.00	300000.00
1946-08-15	Received from [illegible]	5500.00		305500.00	305500.00
1946-09-01	Received from [illegible]	5550.00		311050.00	311050.00
1946-09-15	Received from [illegible]	5600.00		316650.00	316650.00
1946-10-01	Received from [illegible]	5650.00		322300.00	322300.00
1946-10-15	Received from [illegible]	5700.00		328000.00	328000.00
1946-11-01	Received from [illegible]	5750.00		333750.00	333750.00
1946-11-15	Received from [illegible]	5800.00		339550.00	339550.00
1946-12-01	Received from [illegible]	5850.00		345400.00	345400.00
1946-12-15	Received from [illegible]	5900.00		351300.00	351300.00
1947-01-01	Received from [illegible]	5950.00		357250.00	357250.00
1947-01-15	Received from [illegible]	6000.00		363250.00	363250.00
1947-02-01	Received from [illegible]	6050.00		369300.00	369300.00
1947-02-15	Received from [illegible]	6100.00		375400.00	375400.00
1947-03-01	Received from [illegible]	6150.00		381550.00	381550.00
1947-03-15	Received from [illegible]	6200.00		387750.00	387750.00
1947-04-01	Received from [illegible]	6250.00		394000.00	394000.00
1947-04-15	Received from [illegible]	6300.00		400300.00	400300.00
1947-05-01	Received from [illegible]	6350.00		406650.00	406650.00
1947-05-15	Received from [illegible]	6400.00		413050.00	413050.00
1947-06-01	Received from [illegible]	6450.00		419500.00	419500.00
1947-06-15	Received from [illegible]	6500.00		426000.00	426000.00
1947-07-01	Received from [illegible]	6550.00		432550.00	432550.00
1947-07-15	Received from [illegible]	6600.00		439150.00	439150.00
1947-08-01	Received from [illegible]	6650.00		445800.00	445800.00
1947-08-15	Received from [illegible]	6700.00		452500.00	452500.00
1947-09-01	Received from [illegible]	6750.00		459250.00	459250.00
1947-09-15	Received from [illegible]	6800.00		466050.00	466050.00
1947-10-01	Received from [illegible]	6850.00		472900.00	472900.00
1947-10-15	Received from [illegible]	6900.00		479800.00	479800.00
1947-11-01	Received from [illegible]	6950.00		486750.00	486750.00
1947-11-15	Received from [illegible]	7000.00		493750.00	493750.00
1947-12-01	Received from [illegible]	7050.00		500800.00	500800.00
1947-12-15	Received from [illegible]	7100.00		507900.00	507900.00
1948-01-01	Received from [illegible]	7150.00		515050.00	515050.00
1948-01-15	Received from [illegible]	7200.00		522250.00	522250.00
1948-02-01	Received from [illegible]	7250.00		529500.00	529500.00
1948-02-15	Received from [illegible]	7300.00		536800.00	536800.00
1948-03-01	Received from [illegible]	7350.00		544150.00	544150.00
1948-03-15	Received from [illegible]	7400.00		551550.00	551550.00
1948-04-01	Received from [illegible]	7450.00		559000.00	559000.00
1948-04-15	Received from [illegible]	7500.00		566500.00	566500.00
1948-05-01	Received from [illegible]	7550.00		574050.00	574050.00
1948-05-15	Received from [illegible]	7600.00		581650.00	581650.00
1948-06-01	Received from [illegible]	7650.00		589300.00	589300.00
1948-06-15	Received from [illegible]	7700.00		597000.00	597000.00
1948-07-01	Received from [illegible]	7750.00		604750.00	604750.00
1948-07-15	Received from [illegible]	7800.00		612550.00	612550.00
1948-08-01	Received from [illegible]	7850.00		620400.00	620400.00
1948-08-15	Received from [illegible]	7900.00		628300.00	628300.00
1948-09-01	Received from [illegible]	7950.00		636250.00	636250.00
1948-09-15	Received from [illegible]	8000.00		644250.00	6442

Appendix Table 8 continued

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Sept.5-Sept.15	Sixth cutting	1	W-2		7' power mower	26.7	.34	.34
Sept.6-Sept.16	Raking	1	W-2		8' side delivery rake	28.3	.32	.32
Sept.10-Sept.20	Baling				Contract			
Sept.10-Sept.20	Roadsiding				Contract			
Sept.12-Oct.5	Irrigating (2 times) (7.4 acre-in.)						.62	
Oct.5-Oct.15	Seventh cutting	1	W-2		7' power mower	26.7	.34	.34
Oct.6-Oct.16	Raking	1	W-2		8' side delivery rake	28.3	.32	.32
Oct.10-Oct.20	Baling				Contract			
Oct.10-Oct.20	Roadsiding				Contract			
Oct.12-Oct.30	Irrigating (3.7 acre-in.)						.31	
TOTALS							10.32	4.62

APPENDIX TABLE 9

Standard of Inputs and Outputs and Calendar of Operations for Milo
(Per Acre Inputs Based on a Yield of 2 Tons and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
May 15-June 15	Disking (2 times)	1	DT-3		7 1/2' offset disk	18.5	1.0	1.0
May 22-June 22	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
May 24-June 24	Preirrigating (6 acre-in.)						1.6	
May 30-June 30	Disking and cultipacking	1	DT-3		7 1/2' offset disk, 10' cultipacker	18.0	.5	.5
June 1-July 1	Planting (7.5 lbs. of seed)	1	W-2		4-row lister planter	26.4	.3	.3
June 15-July 15	Irrigating (5 acre-in.)						1.7	
June 20-July 20	Cultivating	1	W-2		2-row cultivator	13.3	.7	.7
June 28-July 28	Cultivating and furrowing out	1	W-2		2-row cultivator	14.0	.6	.6
June 30-July 30	Irrigating (4 acre-in.)						1.3	
July 5-Aug. 5	Cultivating and furrowing out	1	W-2		2-row cultivator	14.0	.6	.6
July 10-July 15 to	Irrigating, continuous (12.6 acre-in.)						4.2	
Aug. 30-Sept. 5								
Oct. 15-Nov. 15	Harvesting				Contract			
Oct. 15-Nov. 15	Hauling				Contract			
TOTALS							13.0	4.2

APPENDIX TABLE 10

Standard of Inputs and Outputs and Calendar of Operations for Barley
(Per Acre Inputs Based on a Yield of 20 Cwt. and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Dec.10-Jan.10	Disking (2 times)	1	DT-3		7 1/2' offset disk	18.5	1.0	1.0
Dec.20-Jan.20	Seeding (72.5 lbs.treated seed)	1	W-2		Broadcaster	37.7	.2	.2
Dec.20-Jan.20	Bordering up	1	W-2		Borderer	39.4	.2	.2
Feb.1-Mar.1	Irrigating (6.5 acre-in.)						.9	
Mar.1-Apr.1	Irrigating (6.4 acre-in.)						.8	
Apr.1-May 1	Irrigating (6.3 acre-in.)						.7	
June 1-July 1	Harvesting				Contract			
June 1-July 1	Hauling				Contract			
TOTALS							3.8	1.4

APPENDIX TABLE 11

Standard of Inputs and Outputs and Calendar of Operations for Sugar Beets
(Per Acre Inputs Based on a Yield of 18 Tons and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Dec.15-Feb.1	Chiseling	1	DT-3		8' chisel	15.0	.6	.6
Jan.15-Feb.15	Disking (2 times)	1	DT-3		7 1/2' offset disk	18.5	1.0	1.0
Jan.25-Feb.25	Bedding up	1	W-2		2-row lister	18.7	.5	.5
Feb.1-Mar.1	Planting (5 lb. seed)	1	W-2		4-row planter (rented from sugar company)	12.0	.8	.8
Feb.15-Mar.15	Irrigating (6.5 acre-in.)						.5	
Feb.25-Mar.25	Cultivating	1	W-2		2-row cultivator	10.0	.9	.9
Mar.10-Apr.10	Irrigating (6.5 acre-in.)						.3	
Mar.15-Apr.15	Thinning				Contract		14.0	
Mar.20-Apr.20	Irrigating (6.5 acre-in.)						.25	
Mar.25-Apr.25	Cultivating and side-dressing (375 lbs.fertilizer--21% ammonium sulphate dry)	1	W-2		2-row cultivator with fertilizer attachment	13.0	.7	.7
Apr.1-May 1	Irrigating (6.5 acre-in.)						.25	
Apr.10-May 10	Weeding				Contract		12.0	
Apr.25-May 25	Cultivating and furrowing out	1	W-2		2-row cultivator	17.0	.5	.5
May 1-June 15	Irrigating (2 times) (13 acre-in.)						.5	
May 15-June 15	Cultivating	1	W-2		2-row cultivator	20.0	.5	.5
June 1-July 1 to	Irrigating (5 times) (33 acre-in.)						1.3	
July 20-Aug.20	Plowing in ditches	1	W-2		2-16" 2-way plow	80.0	.1	.1
July 25-Aug.25	Harvesting	2			1-row (rented from sugar company)	6.0	3.0	1.5
Aug.1-Sept.1	Hauling				Contract			
TOTALS							37.7	7.1

APPENDIX TABLE 12

Standard of Inputs and Outputs and Calendar of Operations for Onions
(Per Acre Inputs Based on a Yield of 300 Cwt. and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Aug.1-Oct.15	Disking and harrowing	1	DT-3		7 1/2' offset disk and 8' spike harrow	18.5	1.0	1.0
Sept.28-Oct.28	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
Sept.29-Oct.29	Preirrigating (5 acre-in.)						1.6	
Oct.12-Nov.12	Cultivating, forming beds and fertilizing	1	W-2		2-row potato planter	9.0	1.0	1.0
Oct.15-Nov.15	Planting (3 lbs. of seed)	2	W-2		4-planet jr.seeder (rented)	12.0	1.6	.8
Oct.17-Nov.17	Irrigating (4 acre-in.)						1.4	
Nov. 1-Dec.1	Cultivating	1	W-2		2-row cultivator	10.0	.9	.9
Nov.6-Dec.6	Irrigating (4 acre-in.)						1.3	
Nov.15-Dec.15	Cultivating	1	W-2		2-row cultivator	13.0	.7	.7
Dec.15-Jan.15	Irrigating (4 acre-in.)						1.3	
Jan.1-Feb.1	Hand weeding						13.0	
Jan.10-Feb.10	Cultivating	1	W-2		2-row cultivator	17.0	.5	.5
Jan.25-Feb.25	Spraying (15 gal.material)				Contract			
Feb.15-Mar.15	Irrigating (3 acre-in.)						1.1	
Mar.1-Apr.1	Hand weeding						11.0	
Mar.3-Apr.3	Irrigating (2 acre-in.)						.7	
Mar.15-Apr.15	Irrigating (2 acre-in.)						.7	
Mar.20-Apr.20	Spraying (15 gal.material)				Contract			
Mar.25-Apr.25	Irrigating (2 acre-in.)						.7	
Apr.4-May 4	Irrigating (2 acre-in.)						.7	
Apr.5-May 5	Dusting (25 lbs.5% DDT,50% sulfur)				Contract			
Apr.14-May 14	Irrigating (2 acre-in.)						.7	
Apr.24-May 24	Irrigating (2 acre-in.)						.7	
May 15-June 15	Pulling, topping, sacking (150 man-hours)				Contract			
	Hauling				Contract			
TOTALS							41.1 ^{a/}	5.4

^{a/} Plus 150 man-hours hand harvest labor.

1. The first two items are for the purpose of the first item.

						1. 2. 3.	
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APPENDIX TABLE 13

Standard of Inputs and Outputs and Calendar of Operations for Dry Beans
(Per Acre Inputs Based on a Yield of 20 Cwt. and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Apr.10-May 10	Plowing	1	W-2		2-16" (2-way)	9.3	1.0	1.0
Apr.15-May 15	Disking (2 times)	1	DT-3		7 1/2' offset disk	18.5	1.0	1.0
Apr.25-May 25	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
May 1-June 1	Preirrigating (7.0 acre-in.)						.8	
May 10-June 10	Planting (27.5 lbs.seed)	2	W-2		4-row lister planter	20.0	1.0	.5
May 25-June 25	Cultivating	1	W-2		2-row cultivator	11.0	.8	.8
May 30-June 30	Irrigating (5.3 acre-in.)						.6	
June 15-July 15	Cultivating	1	W-2		2-row cultivator	13.2	.7	.7
June 20-July 20	Irrigating (5.3 acre-in.)						.6	
July 15-Aug.15	Cultivating	1	W-2		2-row cultivator	13.2	.7	.7
July 20-Aug.20	Irrigating (5.2 acre-in.)						.5	
July 25-Aug.25	Hand weed						8.0	
Sept.20-Oct.20	Mowing	1	W-2		2-row (cultivator attachment)	13.5	.7	.7
Sept.20-Oct.20	Raking	1	W-2		8' side delivery rake	15.0	.6	.6
Sept.30-Oct.30	Harvesting				Contract			
Sept.30-Oct.30	Hauling				Contract			
	Cleaning				Contract			
	Sacking				Contract			
TOTALS							17.5	6.5

DATE	TIME	LOCATION	WIND	TEMP	REL. HUM.	SEA	WAVE	WIND	TEMP	REL. HUM.	SEA	WAVE
1954-05-10	0800	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-10	1200	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-10	1600	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-10	2000	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-11	0400	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-11	0800	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-11	1200	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-11	1600	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-11	2000	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-12	0400	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-12	0800	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-12	1200	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-12	1600	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-12	2000	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-13	0400	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-13	0800	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-13	1200	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-13	1600	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0
1954-05-13	2000	10°N 155°E	10	28.0	75	1	1.0	10	28.0	75	1	1.0

(Data from this report were used in the report of the Office of Naval Research, Washington, D.C., dated 1954-05-13, and in the report of the Office of Naval Research, Washington, D.C., dated 1954-05-13.)

APPENDIX TABLE 14

Standard of Inputs and Outputs and Calendar of Operations for Safflower
(Per Acre Inputs Based on a Yield of 3,000 Pounds and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Nov.1-Nov.15	Disking	1	DT-3		7 1/2' offset disk	18.5	.5	.5
Nov.7-Nov.22	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
Nov.15-Dec.1	Preirrigating (6 acre-in.)						1.6	
Nov.20-Dec.5	Disking and harrowing	1	DT-3		7 1/2' offset disk, 8' spike harrow	18.5	.5	.5
Dec.3-Dec.18	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
Dec.10-Dec.25	Planting (20 lbs.of seed)	2	W-2		4 planet jr.(rented)	12.0	1.6	.8
Feb.10-Feb.20	Irrigating (6 acre-in.)						1.7	
Mar.1-Mar.10	Cultivating and fertilizing (300 lbs.-21% ammonium sulfate dry)	1	W-2		2-row cultivator and fertilizer attachment	13.0	.7	.7
Mar.10-Mar.20	Irrigating (6 acre-in.)						1.2	
Apr.1-Apr.10	Cultivating	1	W-2		2-row cultivator	14.3	.6	.6
Apr.10-Apr.20	Irrigating (6 acre-in.)						1.2	
May 1-May 10	Cultivating	1	W-2		2-row cultivator	16.3	.6	.6
May 10-May 20	Irrigating (6 acre-in.)						1.2	
May 25-May 30	Cultivating	1	W-2		2-row cultivator	16.3	.6	.6
July 10-July 25	Harvesting			Contract				
July 10-July 25	Hauling			Contract				
TOTALS							13.0	5.3

APPENDIX TABLE 15

Standard of Inputs and Outputs and Calendar of Operations for Castor Beans
(Per Acre Inputs Based on a Yield of 2,500 Pounds and Typical of a 160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Jan.15-Mar.1	Disking (2 times)	1	DT-3		7 1/2" offset disk	18.5	1.0	1.0
Mar.10-Mar.25	Furrowing out	1	W-2		4-row lister	18.7	.5	.5
Mar.15-Mar.30	Preirrigating (5 acre-in.)						1.5	
Mar.30-Apr.15	Planting and fertilizing (12 lbs. treated seed--200 lbs.--21% ammonium sulphate dry)	2	W-2		Ventura-type bean planter	15.0	1.2	.6
Apr.25-May 10	Cultivating	1	W-2		2-row cultivator	12.0	.8	.8
May 5-May 20	Irrigating (4 acre-in.)						1.5	
May 15-May 30	Cultivating	1	W-2		2- row cultivator	15.0	.6	.6
May 20-June 5	Irrigating (4 acre-in.)						1.4	
June 5-June 20	Irrigating (4 acre-in.)						1.0	
June 20-July 5	Irrigating (4 acre-in.)						.9	
July 5-July 20	Irrigating (4 acre-in.)						.9	
July 20-Aug.5	Irrigating (4 acre-in.)						.9	
Aug.5-Aug.20	Irrigating (4 acre-in.)						.9	
Sept.15-Sept.30	Combining and hulling				Contract			
Sept.15-Sept.30	Hauling				Contract			
TOTALS							13.1	3.5

APPENDIX TABLE 16

Standard of Inputs and Outputs and Calendar of Operations for Field Corn a/
 (Per Acre Inputs Based on a Yield of 2,500 Pounds of Shelled Corn and Typical of a
160-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
June 1-June 10	Disking	1	DT-3		7 1/2' offset disk	18.5	.5	.5
June 1-June 10	Furrowing out	1	W-2		2-row lister	18.7	.5	.5
June 5-June 15	Preirrigating (7.2 acre-in.)						1.4	
June 20-July 1	Planting (8 lbs.of seed)	1	W-2		4-row lister planter	20.0	.5	.5
June 25-July 6	Irrigating (4.0 acre-in.)						1.5	
July 2-July 13	Irrigating (4.0 acre-in.)						1.2	
July 10-July 20	Cultivating	1	W-2		2-row cultivator	11.0	.8	.8
July 12-July 22	Irrigating (4.0 acre-in.)						1.0	
July 22-Aug.1	Cultivating and fertilizing (300 lbs.-21% ammonium sulfate dry)	1	W-2		2-row cultivator with fertilizer attachment	15.0	.6	.6
July 24-Aug.3	Irrigating (4.0 acre-in.)						1.0	
July 31-Aug.10	Cultivating	1	W-2		2-row cultivator	11.0	.8	.8
Aug.2-Aug.12	Irrigating (4.0 acre-in.)						1.0	
Aug.9-Aug.19	Irrigating (4.0 acre-in.)						.9	
Aug.16-Aug.26	Irrigating (4.0 acre-in.)						.9	
Aug.23-Sept.3	Irrigating (4.0 acre-in.)						.8	
Aug.30-Sept.10	Irrigating (4.0 acre-in.)						.8	
b/	Picking and hauling				Contract			
	Shelling				Contract			
TOTALS							14.2	3.7

a/ Operations planned for double cropping after potatoes.

b/ Picking delayed until after frost (usually November 15 or later).

APPENDIX TABLE 17

Standard of Inputs and Outputs and Calendar of Operations for Cotton
(Per Acre Inputs Based on a Yield of 2.1 Bales and Typical of an 80-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Dec.15-Jan.15	Cutting stalks	1	W-3		2-row stalk cutter	20.4	.4	.4
Dec.20-Jan.20	Disking (2 times)	1	W-3		7' offset disk	18.5	1.0	1.0
Jan.10-Feb.20	Plowing	1	W-3		2-16" (2-way)	9.3	1.0	1.0
Feb.15-Mar.15	Furrowing out	1	W-3		4-row lister	28.9	.3	.3
Feb.20-Mar.20	Preirrigating (6 acre-in.)						2.7	
Mar.1-Apr.1	Harrowing down beds	1	W-3		12' spike harrow	30.1	.3	.3
Apr.1-Apr.15	Planting (30 lbs.delinted seed)	2	W-3		4-row lister planter	26.4	.6	.3
Apr.5-Apr.20	Cultipacking	1	W-3		10' cultipacker	33.1	.3	.3
Apr.25-May 5	Cultivating (1st)	1	W-3		2-row cultivator	13.5	.7	.7
May 1-May 20	Chopping				Contract		5.3	
May 5-May 20	Cultivating (2nd)	1	W-3		2-row cultivator	14.3	.6	.6
May 20-June 5	Cultivating (3rd) fertilizing (325 lbs.fertilizer-21% ammonium sulfate dry)	1	W-3		2-row cultivator and fertilizer attachment	13.0	.7	.7
May 20-June 10	Irrigating, 1st (4 acre-in.)						1.4	
May 25-June 15	Hoeing				Contract		3.8	
May 25-June 15	Cultivating (4th)	1	W-3		2-row cultivator	16.3	.6	.6
June 15-June 30	Irrigating, 2nd (4 acre-in.)						1.3	
June 20-July 5	Cultivating (5th)	1	W-3		2-row cultivator	16.3	.6	.6
July 1-July 10	Irrigating, 3rd (4 acre-in.)						1.2	
July 1-July 15	Dusting (60 lbs.5% DDT-50% sulfur)				Contract			
July 5-July 15	Cultivating (6th)	1	W-3		2-row cultivator	16.3	.6	.6
July 15-July 25	Irrigating, 4th (4 acre-in.)						1.1	
July 25-Aug.5	Irrigating, 5th (4 acre-in.)						.9	
July 30-Aug.5	Cultivating (7th)	1	W-3		2-row cultivator	16.3	.6	.6
Aug.1-Sept.10	Irrigating,continuous (12.4 acre-in.)						3.9	
Sept.1-Sept.25	Defoliating				Contract			
Sept.15-on	First picking, hand (88.2 man hours)				Contract			
Nov.15-on	Second picking, hand							
Sept.15-on	Hauling to gin				Pickup and 5-bale cotton trailer		1.0	
TOTALS							30.9 ^{a/}	8.0

a/ Plus 88.2 man-hours picking labor.

APPENDIX TABLE 18

Standard of Inputs and Outputs and Calendar of Operations for Potatoes
(Per Acre Inputs Based on a Yield of 290 Cwt. and Typical of an 80-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Dec.20-Jan.20	Furrowing out	1	W-3		4-row lister	28.9	.3	.3
Dec.20-Jan.20	Preirrigating (5.1 acre-in.)						1.8	
Jan.1-Jan.30	Disking	1	W-3		7' offset disk	18.5	.5	.5
Jan.5-Jan.25	Plowing	1	W-3		2-16" (2-way)	9.3	1.0	1.0
Jan.15-Feb.10	Disking and harrowing	1	W-3		7' offset disk, 8' spike harrow	15.7	.5	.5
Jan.15-Feb.15	Planting and fertilizing (18 cwt. dipped seed, 825 lbs. 21% ammonium sulfate)	2	W-3		2-row planter and fertilizer attachment	8.2	2.2	1.1
Feb.1-Mar.1	Harrowing down beds	1	W-3		12' spike harrow	30.1	.3	.3
Feb.15-Mar.15	Cultivating and furrowing out	1	W-3		2-row cultivator	17.6	.5	.5
Feb.20-Mar.20	Irrigating (4.3 acre-in.)						1.3	
Mar.10-Mar.30	Cultivating and furrowing out	1	W-3		2-row cultivator	18.7	.5	.5
Mar.20-June 1	Irrigating, continuous (20.6 acre-in.)						6.2	
May 5-June 5	Dusting				Contract			
May 15-June 10	Rolling	1	W-3		6' roller	30.5	.3	.3
May 15-June 10	Rotobearing (topping vines)				Contract			
May 20-June 20	Digging				Contract			
May 20-June 20	Picking (36 man-hours)				Contract			
May 20-June 20	Hauling				Contract			
TOTALS							13.6 a/	5.0

a/ Plus 5.6 man-hours for cutting seed and 36 man-hours picking labor.

APPENDIX TABLE 19

Standard of Inputs and Outputs and Calendar of Operations for Alfalfa
(Per Acre Inputs Based on a Yield of 8.5 Tons and Typical of an 80-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Mar.5-Mar.25	Irrigating (4.2 acre-in.)						.74	
Apr.5-Apr.15	First cutting	1	W-3		7' power mower	26.7	.34	.34
Apr.6-Apr.16	Raking	1	W-3		8' side delivery rake	28.3	.32	.32
Apr.10-Apr.20	Baling				Contract			
Apr.10-Apr.20	Roadsiding				Contract			
Apr.12-May 5	Irrigating (2 times) (7.4 acre-in.)						.62	
May 5-May 15	Second cutting	1	W-3		7' power mower	26.7	.34	.34
May 6-May 16	Raking	1	W-3		8' side delivery rake	28.3	.32	.32
May 10-May 20	Baling				Contract			
May 10-May 20	Roadsiding				Contract			
May 12-June 5	Irrigating (2 times) (7.4 acre-in.)						.62	
June 5-June 15	Third cutting	1	W-3		7' power mower	26.7	.34	.34
June 6-June 16	Raking	1	W-3		8' side delivery rake	28.3	.32	.32
June 10-June 20	Baling				Contract			
June 10-June 20	Roadsiding				Contract			
June 12-July 5	Irrigating (3 times) (11.1 acre-in.)						.93	
July 5-July 15	Fourth cutting	1	W-3		7' power mower	26.7	.34	.34
July 6-July 16	Raking	1	W-3		8' side delivery rake	28.3	.32	.32
July 10-July 20	Baling				Contract			
July 10-July 20	Roadsiding				Contract			
July 12-Aug.5	Irrigating (3 times) (11.1 acre-in.)						.93	
Aug.5-Aug.15	Fifth cutting	1	W-3		7' power mower	26.7	.34	.34
Aug.6-Aug.16	Raking	1	W-3		8' side delivery rake	28.3	.32	.32
Aug.10-Aug.20	Baling				Contract			
Aug.10-Aug.20	Roadsiding				Contract			
Aug.12-Sept.5	Irrigating (3 times) (11.1 acre-in.)						.93	

Continued-

Appendix Table 19 continued

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
Sept.5-Sept.15	Sixth cutting	1	W-3		7' power mower	26.7	.34	.34
Sept.6-Sept.16	Raking	1	W-3		8' side delivery rake	28.3	.32	.32
Sept.10-Sept.20	Baling				Contract			
Sept.10-Sept.20	Roadsiding				Contract			
Sept.12-Oct.5	Irrigating (2 times) (7.4 acre-in.)						.62	
Oct.5-Oct.15	Seventh cutting	1	W-3		7' power mower	26.7	.34	.34
Oct.6-Oct.16	Raking	1	W-3		8' side delivery rake	28.3	.32	.32
Oct.10-Oct.20	Baling				Contract			
Oct.10-Oct.20	Roadsiding				Contract			
Oct.12-Oct.30	Irrigating (3.7 acre-in.)						.62	
TOTALS							10.32	4.62

Date	Description	J	K-3	Remarks	Total	Balance
1941-12-15	Cash on hand	1	1		1	1
1941-12-16	Cash on hand	1	1		1	1
1941-12-17	Cash on hand	1	1		1	1
1941-12-18	Cash on hand	1	1		1	1
1941-12-19	Cash on hand	1	1		1	1

Continued on page 11

APPENDIX TABLE 20

Standard of Inputs and Outputs and Calendar of Operations for Milo
(Per Acre Inputs Based on a Yield of 2 Tons and Typical of an 80-Acre Farm Unit)

Dates	Operations	Crew and Equipment				Acres per 9-hour day	Physical requirements	
		Men	Tractor	Truck	Equipment		Man- hours	Tractor hours
May 15-June 15	Disking (2 times)	1	W-3		7' offset disk	18.5	1.0	1.0
May 22-June 22	Furrowing out	1	W-3		4-row lister	28.9	.3	.3
May 24-June 24	Preirrigating (6 acre-in.)						1.6	
May 30-June 30	Disking and cultipacking	1	W-3		7' offset disk, 10' cultipacker	18.0	.5	.5
June 1-July 1	Planting (7.5 lbs.seed)	1	W-3		4-row lister planter	30.0	.3	.3
June 15-July 15	Irrigating (5 acre-in.)						1.7	
June 20-July 20	Cultivating	1	W-3		2-row cultivator	13.3	.7	.7
June 28-July 28	Cultivating and furrowing out	1	W-3		2-row cultivator	14.0	.6	.6
June 30-July 30	Irrigating (4 acre-in.)						1.3	
July 5-Aug.5	Cultivating and furrowing out	1	W-3		2-row cultivator	14.0	.6	.6
July 10-July 15 to	Irrigating, continuous (12.6 acre-in.)						4.2	
Aug.30-Sept.5								
Oct.15-Nov.15	Harvesting				Contract			
Oct.15-Nov.15	Hauling				Contract			
TOTALS							12.8	4.0

APPENDIX TABLE 21

Rates of Pay for Various Tasks Performed in the
Northern Kern County Study Area, 1949-50

Task	Usual Basis of Payment	Rate per Unit
Tractor Driving	Hour	\$ 1.00
Irrigating	Hour	.80
General Farm Labor	Hour	.80
Weeding	Hour	.75
Chopping Cotton	Hour	.75
Picking Cotton	Cwt.of Seed Cotton	3.25
Cutting Potato Seed	Cwt.	.25
Picking Potatoes	Cwt.	.14
Thinning Sugar Beets	Hour	.75
Beet Digger Operating	Hour	1.00
Pulling, Topping, Sacking Onions	Cwt.	.35

Source of data: (1) Field Interview Data

(2) Labor Contractors

Table 1. Summary of data for the 1961-62 season.

Source: U.S. Fish and Wildlife Service, Bureau of Sport Management and Fisheries.

Species	Number of birds banded	Number of birds recovered
Red-winged Blackbird	10	10
Blue-winged Teal	10	10
Green-winged Teal	10	10
Lesser Scaup	10	10
Greater Scaup	10	10
Ring-necked Pheasant	10	10
Chukar	10	10
Partridge	10	10
Quail	10	10
Bobwhite	10	10
Spotted Plover	10	10
Sharp-shinned Hawk	10	10
Red-tailed Hawk	10	10
Golden Eagle	10	10
Osprey	10	10
Great Horned Owl	10	10
Screech Owl	10	10
Barred Owl	10	10
Long-eared Owl	10	10
Great Blue Heron	10	10
Wading Bird	10	10
Other	10	10

Notes: 1. Data for the 1961-62 season are based on the number of birds banded and recovered. 2. Data for the 1962-63 season are based on the number of birds banded and recovered.

APPENDIX TABLE 22

Charges for Contracted Operations in the
Northern Kern County Study Area, 1950

Enterprise and Operation	Basis of Charge	Charge per Unit
Alfalfa:		
Baling	Ton	\$ 3.65
Roadsiding	Ton	1.20
Barley:		
Harvesting	Acre	5.00
Hauling	Cwt. <u>b/</u>	.09
Beans:		
Harvesting	Cwt.	.75
Hauling	Cwt. <u>b/</u>	.075
Cleaning	Cwt.	.10
Castor Beans:		
Combining and Hauling	Lb.	.01
Hauling	Ton <u>b/</u>	6.50
Cotton:		
Dusting	Lb.	.04
Defoliating	Acre <u>a/</u>	4.00
Ginning	Bale <u>d/</u>	12.79
Field Corn:		
Picking and Hauling	Acre	10.00
Shelling	Acre	3.00
Milo:		
Harvesting	Ton	5.00
Hauling	Ton <u>b/</u>	2.00

Continued-

Appendix Table 22 continued

Enterprise and Operation	Basis of Charge	Charge per Unit
Onions:		
Spraying	Gal.	¢ .05
Dusting	Lb.	.04
Hauling	Ton <u>b/</u>	2.50
Potatoes:		
Dusting	Lb.	.04
Rotobearing	Acre	3.00
Digging	Acre	10.00
Hauling	Cwt. <u>b/</u>	.10
Shed Costs (Washing, Grading, Sacking, Loading)	Cwt.	.50
Safflower:		
Harvesting	Ton	6.00
Hauling	Ton <u>b/</u>	4.25
Rental on Planting Equipment	Acre	.35
Sugar Beets:		
Rental on DT-4 Tractor	Hour	3.00
Rental on Beet Digger	Acre	10.00
Rental on Planting Equipment	Acre	.35
Hauling	Ton <u>b/</u> <u>c/</u>	2.20

a/ Including materials.

b/ Based on average haul under present conditions.

c/ Net of company rebate.

d/ Including materials.

Source of data: (1) Field interview data.

(2) Job contractors.

[illegible]

5/ Инженер В.С.Степанов

APPENDIX TABLE 23

Costs of Materials Used in the
Northern Kern County Study Area, 1950

Materials	Unit	Cost per Unit
Seed:		
Alfalfa	Lb.	\$.25
Bean (Pink and Small White)	Lb.	.08
(Blackeye)	Lb.	.15
Barley (Treated)	Lb.	.035
Castor Bean	Lb.	.25
Cotton (Delinted)	Lb.	.06
Corn	Lb.	.24
Milo	Lb.	.08
Onion	Lb.	.08
Potato (Dipped)	Cwt.	5.00
Safflower	Lb.	.04125
Sugar Beet	Lb.	.45
Dusts and Sprays:		
5% DDT-50% Sulfur	Cwt.	5.50
5% DDT-75% Sulfur	Cwt.	5.75
10% DDT-50% Sulfur	Cwt.	9.14
Cotton Defoliant <u>a/</u>	Lb.	.37
Onion Oil Spray	Gal.	.12

Continued-

Appendix Table 23 continued

Materials	Unit	Cost per Unit
Fertilizers and Soil Conditioners:		
Quarry Gypsum	Ton	* 3.00
Commercial Gypsum (Refined)	Ton	12.00
Lime-Sulfur (Liquid)	Gal.	.25
Sulfuric Acid	Ton	45.00
16-20 (Dry)	Ton	85.00
21% Ammonium Sulfate (Dry)	Ton	56.00
33 1/3% Ammonium Nitrate (Dry)	Ton	80.00
20% Ammonium Nitrate Solution	Gal.	.37
15-5-0 Liquid	Gal.	.67
10-10-0 Liquid	Gal.	.67
Aqua Ammonia 20%	Gal.	.30
Calcium Nitrate	Ton	60.00
Single Super Phosphate	Ton	27.00
NH ₃	Lb.	.10
Fuel and Lubricants:		
Gasoline	Gal.	.208
Diesel Fuel	Gal.	.111
Stove Oil	Gal.	.126
Motor Oil	Gal.	.675
Grease	Lb.	.1325

a/ Usually included in charge for application.

APPENDIX TABLE 24

Electric Power Costs in the Northern Kern County
Study Area, 1950

Size of Motor (Horsepower)	Service Charge per year	First 1000 Kilowatt Hrs.		Next 1000 Kilowatt Hrs.		Accumulation including Service Charge per year	Charge for over 2000 KWH per HP per year
		Charge per KWH per HP per year	Total per year	Charge per KWH per HP per year	Total per year		
30	\$ 150.90	\$.0122	\$ 366.00	\$.0074	\$ 222.00	\$ 738.90	\$.0053
40	201.20	.0122	488.00	.0074	296.00	985.20	.0053
50	225.00	.0111	555.00	.0074	370.00	1,150.00	.0048
75	337.50	.0111	832.50	.0074	555.00	1,725.00	.0048
100	397.00	.0111	1,110.00	.0074	740.00	2,247.00	.0048

Source of data: Pacific Gas and Electric Company Power Schedule P-3 Effective April 15, 1950.

APPENDIX TABLE 25

Overhead Costs in Operating Tractors of Typical Sizes
Found on 80- and 160-Acre Cotton and Potato Farms
in the Northern Kern County Study Area, 1950

Typical Tractors	First Cost	Salvage Value	Average Value	Expected Life (Years)	Overhead Costs per Year				Total Overhead Cost Per Year
					Depreciation	Interest	Taxes and Insurance	Shelter	
W-2	\$1,485	\$ 225	\$ 855	8	\$ 157.50	\$42.75	\$14.85	\$1.50	\$216.60
W-3	2,490	375	1,432	8	264.38	71.60	24.90	1.75	362.73
DT-3	2,990	450	1,720	8	317.50	86.00	29.90	2.00	435.40

Source of data: (1) Field interview data.

(2) Farm implement dealers.

(1) *Table of values*

Table of values (1) *Table of values*

100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100

Table of values (1) *Table of values*
 Table of values (1) *Table of values*
 Table of values (1) *Table of values*

APPENDIX TABLE 26
Overhead Costs in Operating Farm Implements
Typically Found on 80 and/or 160 Acre Cotton and Potato Farms
in the Northern Kern County Study Area, 1949

Typical Implements	First Cost	Salvage Value	Average Value	Expected Life (Years)	Overhead Costs Per Year			Total Overhead Cost Per Year
					Depreciation	Interest	Taxes and Insurance	
Borderer, 4-Disk	\$ 95	\$ 9.50	\$ 52.25	12	\$ 7.13	\$ 2.61	\$.95	\$ 10.69
Broadcast Seeder, Endgate	80	8.00	44.00	10	7.20	2.20	.80	10.20
Chisel, 8'	305	30.50	167.75	12	22.88	8.39	3.05	34.32
Cotton Trailer, 5 Bale	285	28.50	156.75	12	21.38	7.84	2.85	32.07
Cultipacker, 10'	210	21.00	115.50	10	18.90	4.62	2.10	25.62
Cultivators								
2-Row	180	18.00	99.00	12	15.17	4.95	1.80	21.92
4-Row	330	33.00	181.50	12	24.75	9.08	3.30	37.13
Ditcher, 5' V	135	13.50	74.25	12	10.12	3.71	1.35	15.18
Drag Float, 8' x 30' Shop Made	50	5.00	27.50	12	3.75	1.38	.50	5.63
Fertilizer Attachments								
2-Row	75	7.50	41.25	10	6.75	2.06	.75	9.56
4-Row	125	12.50	68.75	10	11.75	3.44	1.25	16.44
Harrows, Disk								
7' Offset	341	34.10	187.55	12	25.58	9.38	3.41	38.37
7 1/2' Offset	385	38.50	211.75	12	28.88	10.59	3.85	43.32
10' Offset	525	52.50	288.75	12	39.38	14.44	5.25	59.07

Continued-

Appendix Table 26 continued

Typical Implements	First Cost	Salvage Value	Average Value	Expected Life (Years)	Overhead Costs Per Year			Total Overhead Cost Per Year
					Depreciation	Interest	Taxes and Insurance	
Harrow, Spike 3-4' Sections	\$ 60	\$ 6.00	\$ 33.00	12	\$ 4.50	\$ 1.65	\$.60	\$ 6.75
Listers								
2-Row	170	17.00	93.50	12	12.75	4.68	1.70	19.13
4-Row	315	31.50	173.25	12	23.63	8.66	3.15	35.44
Lister Planter 4-Row	405	40.50	222.75	10	36.45	11.14	4.05	51.64
Mower Attachment 7' Trailer Type	180	18.00	99.00	10	16.20	4.95	1.80	22.95
Plow, 2-16" 2-way	325	32.50	178.75	12	24.38	8.94	3.25	36.57
Potato Planter, 2-Row (including fertilizer attachment)	570	57.00	313.50	10	51.30	15.68	5.70	72.68
Rake, 8' Side Delivery	315	31.50	173.25	10	28.35	8.66	3.15	40.16
Roller, 6' Steel	115	11.50	63.25	12	8.62	3.16	1.15	12.93
Scraper, 8'	265	26.50	145.75	12	19.88	7.29	2.65	29.82
Stalk Cutter, 2-Row	95	9.50	52.25	10	8.65	2.61	.95	12.21

Source of data: Interview data.

TABLE 1. - SUMMARY OF DATA

STATION	DATE	TIME	WIND	TEMP	REL	WIND	TEMP	REL
1	1/15	0800	10	55	75	10	55	75
2	1/15	0900	12	58	78	12	58	78
3	1/15	1000	15	60	80	15	60	80
4	1/15	1100	18	62	82	18	62	82
5	1/15	1200	20	65	85	20	65	85
6	1/15	1300	22	68	88	22	68	88
7	1/15	1400	25	70	90	25	70	90
8	1/15	1500	28	72	92	28	72	92
9	1/15	1600	30	75	95	30	75	95
10	1/15	1700	32	78	98	32	78	98
11	1/15	1800	35	80	100	35	80	100
12	1/15	1900	38	82	102	38	82	102
13	1/15	2000	40	85	105	40	85	105
14	1/15	2100	42	88	108	42	88	108
15	1/15	2200	45	90	110	45	90	110
16	1/15	2300	48	92	112	48	92	112
17	1/15	2400	50	95	115	50	95	115
18	1/15	2500	52	98	118	52	98	118
19	1/15	2600	55	100	120	55	100	120
20	1/15	2700	58	102	122	58	102	122
21	1/15	2800	60	105	125	60	105	125
22	1/15	2900	62	108	128	62	108	128
23	1/15	3000	65	110	130	65	110	130
24	1/15	3100	68	112	132	68	112	132
25	1/15	3200	70	115	135	70	115	135
26	1/15	3300	72	118	138	72	118	138
27	1/15	3400	75	120	140	75	120	140
28	1/15	3500	78	122	142	78	122	142
29	1/15	3600	80	125	145	80	125	145
30	1/15	3700	82	128	148	82	128	148
31	1/15	3800	85	130	150	85	130	150
32	1/15	3900	88	132	152	88	132	152
33	1/15	4000	90	135	155	90	135	155
34	1/15	4100	92	138	158	92	138	158
35	1/15	4200	95	140	160	95	140	160
36	1/15	4300	98	142	162	98	142	162
37	1/15	4400	100	145	165	100	145	165
38	1/15	4500	102	148	168	102	148	168
39	1/15	4600	105	150	170	105	150	170
40	1/15	4700	108	152	172	108	152	172
41	1/15	4800	110	155	175	110	155	175
42	1/15	4900	112	158	178	112	158	178
43	1/15	5000	115	160	180	115	160	180
44	1/15	5100	118	162	182	118	162	182
45	1/15	5200	120	165	185	120	165	185
46	1/15	5300	122	168	188	122	168	188
47	1/15	5400	125	170	190	125	170	190
48	1/15	5500	128	172	192	128	172	192
49	1/15	5600	130	175	195	130	175	195
50	1/15	5700	132	178	198	132	178	198
51	1/15	5800	135	180	200	135	180	200
52	1/15	5900	138	182	202	138	182	202
53	1/15	6000	140	185	205	140	185	205
54	1/15	6100	142	188	208	142	188	208
55	1/15	6200	145	190	210	145	190	210
56	1/15	6300	148	192	212	148	192	212
57	1/15	6400	150	195	215	150	195	215
58	1/15	6500	152	198	218	152	198	218
59	1/15	6600	155	200	220	155	200	220
60	1/15	6700	158	202	222	158	202	222
61	1/15	6800	160	205	225	160	205	225
62	1/15	6900	162	208	228	162	208	228
63	1/15	7000	165	210	230	165	210	230
64	1/15	7100	168	212	232	168	212	232
65	1/15	7200	170	215	235	170	215	235
66	1/15	7300	172	218	238	172	218	238
67	1/15	7400	175	220	240	175	220	240
68	1/15	7500	178	222	242	178	222	242
69	1/15	7600	180	225	245	180	225	245
70	1/15	7700	182	228	248	182	228	248
71	1/15	7800	185	230	250	185	230	250
72	1/15	7900	188	232	252	188	232	252
73	1/15	8000	190	235	255	190	235	255
74	1/15	8100	192	238	258	192	238	258
75	1/15	8200	195	240	260	195	240	260
76	1/15	8300	198	242	262	198	242	262
77	1/15	8400	200	245	265	200	245	265
78	1/15	8500	202	248	268	202	248	268
79	1/15	8600	205	250	270	205	250	270
80	1/15	8700	208	252	272	208	252	272
81	1/15	8800	210	255	275	210	255	275
82	1/15	8900	212	258	278	212	258	278
83	1/15	9000	215	260	280	215	260	280
84	1/15	9100	218	262	282	218	262	282
85	1/15	9200	220	265	285	220	265	285
86	1/15	9300	222	268	288	222	268	288
87	1/15	9400	225	270	290	225	270	290
88	1/15	9500	228	272	292	228	272	292
89	1/15	9600	230	275	295	230	275	295
90	1/15	9700	232	278	298	232	278	298
91	1/15	9800	235	280	300	235	280	300
92	1/15	9900	238	282	302	238	282	302
93	1/15	10000	240	285	305	240	285	305
94	1/15	10100	242	288	308	242	288	308
95	1/15	10200	245	290	310	245	290	310
96	1/15	10300	248	292	312	248	292	312
97	1/15	10400	250	295	315	250	295	315
98	1/15	10500	252	298	318	252	298	318
99	1/15	10600	255	300	320	255	300	320
100	1/15	10700	258	302	322	258	302	322
101	1/15	10800	260	305	325	260	305	325
102	1/15	10900	262	308	328	262	308	328
103	1/15	11000	265	310	330	265	310	330
104	1/15	11100	268	312	332	268	312	332
105	1/15	11200	270	315	335	270	315	335
106	1/15	11300	272	318	338	272	318	338
107	1/15	11400	275	320	340	275	320	340
108	1/15	11500	278	322	342	278	322	342
109	1/15	11600	280	325	345	280	325	345
110	1/15	11700	282	328	348	282	328	348
111	1/15	11800	285	330	350	285	330	350
112	1/15	11900	288	332	352	288	332	352
113	1/15	12000	290	335	355	290	335	355
114	1/15	12100	292	338	358	292	338	358
115	1/15	12200	295	340	360	295	340	360
116	1/15	12300	298	342	362	298	342	362
117	1/15	12400	300	345	365	300	345	365
118	1/15	12500	302	348	368	302	348	368
119	1/15	12600	305	350	370	305	350	370
120	1/15	12700	308	352	372	308	352	372
121	1/15	12800	310	355	375	310	355	375
122	1/15	12900	312	358	378	312	358	378
123	1/15	13000	315	360	380	315	360	380
124	1/15	13100	318	362	382	318	362	382
125	1/15	13200	320	365	385	320	365	385
126	1/15	13300	322	368	388	322	368	388
127	1/15	13400	325	370	390	325	370	390
128	1/15	13500	328	372	392	328	372	392
129	1/15	13600	330	375	395	330	375	395
130	1/15	13700	332	378	398	332	378	398
131	1/15	13800	335	380	400	335	380	400
132	1/15	13900	338	382	402	338	382	402
133	1/15	14000	340	385	405	340	385	405
134	1/15	14100	342	388	408	342	388	408
135	1/15	14200	345	390	410	345	390	410
136	1/15	14300	348	392	412	348	392	412
137	1/15	14400	350	395	415	350	395	415
138	1/15	14500	352	398	418	352	398	418
139	1/15	14600	355	400	420	355	400	420
140	1/15	14700	358	402	422	358	402	422
141	1/15	14800	360	405	425	360	405	425
142	1/15	14900	362	408	428	362	408	428
143	1/15	15000	365	410	430	365	410	430
144	1/15	15100	368	412	432	368	412	432
145	1/15	15200	370	415	435	370	415	435
146	1/15	15300	372	418	438	372	418	438
147	1/15	15400	375	420	440	375	420	440
148	1/15	15500	378	422	442	378	422	442
149	1/15	15600	380	425	445	380	425	445
150	1/15	15700	382	428	448	382	428	448
151	1/15	15800	385	430	450	385	430	450
152	1/15	15900	388	432	452	388	432	452
153	1/15	16000	390	435	455	390	435	455
154	1/15	16100	392	438	458	392	438	458
155	1/15	16200	395	440	460	395	440	460
156								

APPENDIX TABLE 27

Overhead Costs in Operating Farm Pumping Plants
Typically Found on 80- and/or 160 Acre Cotton and Potato Farms in the
Northern Kern County Study Area, 1949

Typical Well and Pump	First Cost	Salvage Value	Average Value	Expected Life (Years)	Overhead Costs Per Year			Total Overhead Cost Per Year
					Depreci- ation	Interest	Taxes and Insurance	
#1 900 G.P.M. 550' Drilled gravel envelope with 50 HP electric motor on pump with bowls at 225'								
Well	\$1,720	\$ --	\$ 860	20	\$ 86.00	\$ 34.40		
Casing	1,250	--	625	20	62.50	25.00		
Motor	900	90	495	20	40.50	19.80		
Pump Assembly	3,145	--	1,572	20	157.25	62.88		
TOTAL	\$7,015	\$ 90	\$3,552	20	\$346.25	\$142.08	\$ 90.00	\$578.33
#2 700 G.P.M. 400' Drilled with 30 HP electric motor on pump with bowls at 200'								
Well	\$1,015	\$ --	\$ 508	20	\$ 50.75	\$ 20.32		
Casing	940	--	470	20	47.00	18.80		
Motor	655	66	360	20	29.45	14.40		
Pump Assembly	1,990	--	995	20	99.50	39.80		
TOTAL	\$4,600	\$ 66	\$2,333	20	\$226.70	\$ 93.32	\$ 65.00	\$385.02

Source of data: Field Interview data.

FORMS OF 9575: 11619 INCLAYEN 9575

APPENDIX TABLE 28

Overhead Costs in Operating Underground Irrigation Systems
 Typical of 80- and 160-Acre Cotton and Potato Farms
 in the Northern Kern County Study Area, 1949

Typical Physical Systems	First Cost	Average Value	Expected Life (Years)	Overhead Costs Per Year			Total Overhead Cost Per Year
				Depreci- ation	Interest	Taxes and Insurance	
<u>80 Acre Unit</u>							
Concrete Pipe (4130'- 14" and 12")	\$2,694.00	\$1,347.00	30	\$ 89.80	\$ 53.88		
Standpipes (3 - 36" x 72")	88.00	44.00	30	2.93	1.76		
Breathers (5-4" Steel)	17.00	8.50	30	.57	.34		
Valves and Gates (40)	665.00	332.50	30	22.17	13.30		
Cap Stands (1)	25.00	12.50	30	.83	.50		
TOTAL	\$3,489.00	\$1,744.50	30	\$116.30	\$ 69.78	\$ 45.00	\$ 231.08
<u>160 Acre Unit</u>							
Concrete Pipe (7730'- 16", 14", and 12")	\$5,332.00	\$2,666.00	30	\$177.73	\$106.64		
Standpipes (4-36" x 72")	117.00	58.50	30	3.90	2.34		
Breathers (9 Steel)	32.00	16.00	30	1.07	.64		
Valves and Gates (80)	1,591.00	795.50	30	53.03	31.82		
Cap Stands (2)	50.00	25.00	30	1.67	1.00		
TOTAL	\$7,122.00	\$3,561.00	30	\$237.40	\$142.44	\$ 75.00	\$ 454.84

Source of data: Field Interview data.

Source of data: State Insurance Dept.

100VLT	\$1,155.00	\$3,297.00	30	\$531.70	\$175.74	\$ 12.00	\$ 121.87
Cab Straps (5)	20.00	52.00	30	1.93	1.00		
Arms and Cases (50)	1,221.00	132.20	30	23.03	37.35		
Receptacles (2 Street 15u)	35.00	19.00	30	1.01	.07		
Stanchions (7-30u x 10u-17u and 15u)	111.00	28.20	30	3.80	5.34		
Concrete Pipe (1120,- 100 Vole Unit)	\$2,335.00	\$5,999.00	30	\$11.13	\$109.97		
100VLT	\$1,189.00	\$1,171.20	30	\$119.30	\$ 99.18	\$ 12.00	\$ 531.08
Cab Straps (1)	52.00	15.20	30	.83	.20		
Arms and Cases (70)	992.00	335.20	30	55.11	13.30		
Receptacles (2-17u Street 30u x 15u)	11.00	8.20	30	.21	.34		
Stanchions (3 - 17u and 15u)	88.00	14.80	30	5.83	1.78		
Concrete Pipe (1120,- 30 Vole Unit)	\$5,999.00	\$1,311.00	30	\$ 89.90	\$ 23.98		
Garage Highway Lowway	Cost Price	Value Variable	(Rate) Rate Subscribed	Portion Reflected	Interest	Insurance Losses and Loses	Per Year Cost Overhead Loss
Overhead Costs Per Year							

In the Northern Rural County Group Area, 1948
 District of 80- and 100-Vole Cotton and Potato Areas
 Overhead Costs in Operating Underground Irrigation Systems

APPENDIX TABLE 58